

**Maryland Local Governments Energy
Performance Guide
APPENDICES
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APPENDIX A
SITE SELECTION CRITERIA

- Energy STAR rating score of 50 or less
- Minimal availability of funds for energy related capital improvements
- Annual utility costs greater than \$200,000, unless part of aggregation with other local governments
- Aging buildings and equipment
- Comfort complaints
- Limited energy management expertise
- Too many demands on maintenance staff
- Lighting system equipment older than 10 years of age
- Most primary HVAC equipment older than 10 years of age
- Most building controls older than 10 years of age, or no building controls
- Large amounts of deferred maintenance
- Very low efficiency of major energy consuming equipment
- Excessive external maintenance contract costs
- High inventory costs for equipment and materials

APPENDIX B
TECHNICAL FACILITY PROFILE
SECTION I: GENERAL FACILITY DATA

Please use additional pages as required.

1. Name of Building:
2. Address of Building:
3. Primary Use:
4. Technical Contact: Phone:

[Note: Submission of a comprehensive Energy Audit completed within the last 2 years by a qualified energy auditor may provide much of the following requested information.]

SECTION II: OPERATING DATA

1. Please describe the manufacturer(s), age, type and condition of the HVAC control system(s) used in the building(s).
2. If you have an operating Energy Management System (EMS) controlling your building, please list the manufacturer, year installed and operating conditions.

SECTION III: PHYSICAL DATA

1. Gross floor area (SF)
2. Weekly operating hours
3. # of daily occupants
4. # of personal computers
5. Percent of floor area that is air conditioned ($\geq 50\%$, $< 50\%$, or none)
6. Percent of floor area that is heated ($\geq 50\%$, $< 50\%$, or none)

SECTION IV: ENERGY SYSTEMS DATA

Please provide as much of the following information as is available.

Briefly describe the major type(s) of HVAC system(s) serving your building (i.e., terminal reheat, multi-zone, variable air volume, etc.) Indicate the main fuels used to operate the heating and cooling systems.

1. Estimate the percentage of total area lighted by fluorescent ballasts and bulbs, and incandescent bulbs. Estimate the approximate annual hours of operation for each predominant type of lighting. If you have a significant amount of HID lighting, please describe it in similar terms. Indicate the percentage of fluorescent lighting, if any, which has been upgraded to electronic ballasts and T-8 lamps. Describe the age of existing fixture and ballast systems for each lighting

type.

SECTION V: IMPROVEMENT OPPORTUNITIES

1. Briefly describe any serious equipment, operating, or comfort problems in your building(s). Identify any major mechanical, control or electrical systems scheduled for replacement during the next five years.
2. Briefly list any major energy conservation options identified by a previous analysis of your building.

SECTION VI: ENERGY AND WATER CONSUMPTION DATA

Please summarize utility consumption and costs for all fuel types, including water, over the last three (3) years for each project building using the forms that follow. If you are buying contract gas or electricity, give your monthly price history, if available, on a separate sheet for your cost of gas.

Please list all utility tariff schedules that apply to your building(s).

ELECTRIC CONSUMPTION

Name of Facility:

Name of Utility:

Site Address (as it appears on bill):

Account Number(s):

Billing Month/Yr.	# Days	Demand KW	# of KWH	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	Demand KW	# of KWH	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	Demand KW	# of KWH	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

NATURAL GAS

Name of Facility:

Site Address (as it appears on bill):

Account Number(s):

Name of Utility:

Billing Month/Yr.	# Days	# of Therms	# of CCF	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Therms	# of CCF	Total Cost
Jan.				
Feb.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Therms	# of CCF	Total Cost
Jan.				
Feb.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

WATER

Name of Facility:

Address (as it appears on bill):

Account Number(s):

Name of Utility:

Billing Month/Yr.	# Days	# of Gallons	Sewage Charge	Total Cost
Jan.				
Feb.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Gallons	Sewage Charge	Total Cost
Jan.				
Feb.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Gallons	Sewage Charge	Total Cost
Jan.				
Feb.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

OTHER

Name of Facility:

Address:

Type of Fuel:

Name of Utility:

Billing Month/Yr.	# Days	# of Units (Specify)	Other charges (if applicable)	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Units (Specify)	Other charges (if applicable)	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Units (Specify)	Other charges (if applicable)	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

SITE BASELINE DATA COLLECTION

Please provide as much of the following information as is available.

1. What is your current annual maintenance budget?
2. What is the total square footage managed with that budget?
3. What is your annual budget for external maintenance contracts?
4. What is your current estimate of deferred maintenance in total dollars and dollars per square foot?
5. What is your current capital budget allocation as a percentage of your total capital budget requests?
6. What is the total annual number of facility maintenance complaints?
7. What is the total number of occupants in the building?

What is the average number of square feet of building space per building occupant?

8. What is the average number of annual sick days per worker?
9. Please estimate the percentage of your annual maintenance budget that is spent on corrective or reactive maintenance.
10. Please estimate the percentage of your annual maintenance budget that is spent, on preventative, predictive, or proactive maintenance.
11. Can you identify any specific building system that has a potentially large negative impact on employee health, productivity or morale? If yes, what is that building system?
12. Do you currently track indoor air comfort and air quality complaints?
13. Do you survey building occupants annually as to IAQ, comfort, and lighting?

APPENDIX C
SAMPLE REQUEST FOR PROPOSALS

FOR ENERGY SAVINGS PERFORMANCE CONTRACTING
(INSERT PROJECT NAME)
PROJECT NO.

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PART I. GENERAL INFORMATION

I-1. PURPOSE. This Request For Proposals (RFP)

ADDRESS:

EMAIL:

Questions and requests for clarification on this Request for Proposals must be submitted ***in writing*** by the dates indicated in **Part III, Project Schedule**. Responses to all written inquiries will be answered by addendums.

No verbal inquiries will be addressed. In the event it becomes necessary to revise any part of this RFP,

an addendum will be issued. Only written modifications will be legally binding. No employee or agent of the Owner may verbally alter the contents of this RFP.

I-4 Communication with other officials of the Owner, the Selection Committee, or others associated with the project with regard to this RFP is prohibited. **RESPONSE DATE.** To be considered, proposals must be received by **(insert time)**, on **(insert date)**, at **(insert location)** on the date designated in Proposals delivered after that time will not be considered. Late or incomplete proposals will not be accepted regardless of the reason.

Submit To: **(Insert name and address)**

I-5. GOAL. The Owner's overall goals are:

- To increase energy efficiency and building performance with the goal of reducing energy usage and demand;
- Reduce facilities life cycle costs including: maintenance, equipment replacement, energy and water utilities, waste disposal, emergency power outages, etc.;
- To improve indoor environmental quality for occupants; and
- To address deferred repair and maintenance projects.

Owner is interested in contracting one (1) ESCO for a full range of energy services and energy-related capital improvements ("energy conservation measures" or "ECMs"), financed through an ESPC project with Owner at the Project Sites. The ECMs and services may include but are not limited to an investment grade audit; the design, acquisition, installation, modification, maintenance and operation of existing and new equipment; and the training of Owner's personnel. These improvements are intended to reduce energy consumption and related costs associated with the heating, ventilation and air conditioning systems; lighting systems; building envelope; the hot water systems; water consumption; sewage costs; and other energy using devices. The ECMs and services will also look for savings which may not reduce consumption but are aimed at cost savings such as fuel switching; demand reductions; on-site generation; electrical sub-metering; and automated utility bill auditing, utility rate changes and distribution upgrades. ECMs must result in a guaranteed minimum energy savings with the ESCO payments linked to actual documented energy and cost reductions. Any stipulated energy and/or operational cost savings that may be attributed to this project will be rigorously reviewed and, if agreed to, will be limited to those that can be thoroughly documented and verified by the ESCO and approved by Owner. Reductions in operations and maintenance costs will require the definition and quantification of baseline costs from documented operations and maintenance cost records.

The savings achieved by the ECMs must be sufficient to cover all project costs including service maintenance costs and monitoring fees on an annual basis for the duration of the contract term. The contract must provide that the savings in any year are guaranteed to the extent necessary to make payments under the contract during that year. ESCOs will be required to guarantee energy and cost savings on an annual basis. No credit for the achievement of savings above and beyond the annual guarantee will be credited to satisfy performance guarantees in future years of the contract. Annual reconciliation of the achieved savings will be required.

I-6. DESCRIPTION OF THE PROCUREMENT PROCESS. To achieve this goal Owner will evaluate proposals according to the following process:

1.) **SUBMISSION OF WRITTEN PROPOSAL.** Interested ESCOs will participate in the mandatory walk-throughs of all project buildings and must submit their proposals (All Attachments listed in Part II) by the required deadline. Owner, through its designated representatives on the Evaluation Committee, will review and evaluate the proposals in response to this RFP based on the evaluation criteria identified in **Part IV, Evaluation Criteria for RFP**

2.) **ORAL INTERVIEW.** ESCOs will be required to participate in an oral interview. The purpose of this session is to allow the ESCO to explain its proposal in more detail and for the Owner to ask clarifying questions. Oral interview answers will be graded as part of the Part IV, Evaluation Criteria for RFP overall grading.

3.) **SELECTION OF ESCO TO DEVELOP THE PROJECT.** Owner will select the best qualified ESCO to negotiate an Investment Grade Audit (IGA) for the Project Site that will result in a set of ECMs. The IGA will include:

1. **An executive summary**
2. **Measures evaluated but not recommended**
3. **Proposed project or measure specific baselines**
4. **ECM descriptions**
 - a. **Existing conditions**
 - b. **Existing deficiencies**
 - c. **Narrative description of proposed improvements**
 - d. **Scope of work**
 - e. **Equipment manufacturer or type**
 - f. **Energy savings calculations**
 - g. **Commissioning procedure**
 - h. **Environmental impacts**
 - i. **Training required**
 - j. **Operation and maintenance cost savings calculations, if any**
5. **IGA shall also include the following schedules**
 - a. **Equipment to be installed by ESCO**
 - b. **Description of premises: pre-existing equipment inventory**
 - c. **Energy saving guarantee**
 - d. **Compensation to ESCO**
 - e. **Baseline energy consumption and utility rates**
 - f. **Savings measurement & calculation formulae: methodology to adjust baseline**
 - g. **Construction and installation schedule**
 - h. **Systems start-up and commissioning**
 - i. **Standards of comfort**
 - j. **ESCO's maintenance responsibilities**
 - k. **Agency's maintenance responsibilities**
 - l. **Facility maintenance checklist**
 - m. **ESCO's training responsibilities**
 - n. **Financing schedule**
 - o. **Proposed final project cost & proposed final project cash flow analysis**
 - p. **Estimated pre- and post-retrofit Energy Star ratings for facilities**
 - q. **Proof of performance and payment bonding capability**
 - r. **Equipment warranties**

4.) INVESTMENT GRADE AUDIT AGREEMENT. If Owner decides to proceed with the IGA, Owner will execute a consultant services agreement with the selected ESCO.

5.) ENERGY SAVINGS PERFORMANCE CONTRACT. Owner shall have the option to negotiate an energy savings performance contract (ESPC) with the selected ESCO that performed the IGA. If Owner decides not to enter into an ESPC with the selected ESCO after the IGA has been accepted, Owner agrees to pay the fee indicated for the completed IGA report as set forth in the executed consultant services agreement.

I-7. REJECTION OF PROPOSALS. Owner reserves the right to reject at any time any and all proposals received (in accordance with the DAGS-SPO Vendor List instructions).

I-8. INCURRING COSTS. Owner is not liable for any cost or expenses incurred by ESCOs in the preparation of the proposal, for performing any analysis, or for attendance at any conferences and meetings related to this RFP

I-9. PRE-PROPOSAL CONFERENCE. The pre-proposal conference is mandatory and will be held prior to the facility walk-throughs.

I-10. CONFIDENTIALITY. The contents of any Proposal shall not be disclosed to parties other than the Owner or its evaluation consultants during the review, evaluation, discussion, or negotiation process. Once a contract is executed with the successful proposer, all Proposals, successful and unsuccessful, become available for public inspection.

A Proposal may contain financial information, legitimate trade secrets or other proprietary data which the Proposer may consider to be confidential. If the Proposer desires such trade secrets or proprietary data to be held in confidence by Owner the Proposer shall specifically designate and identify the portion(s) of the Proposal which the Proposer desires to be held in confidence and the reason such portion should be held in confidence. The Owner will consider the Proposer's designation and the basis for such a designation request. If the Owner disagrees with the Proposer's designation or the basis thereof, the Owner will so inform the Proposer. Any dispute between the Proposer and the Owner over such designation or the basis thereof will be resolved in accordance with the applicable statutes and rules of the of Maryland.. The portion of the Proposal which the Proposer designates as confidential shall be readily separable from the Proposal in order to facilitate eventual public inspection of the non-confidential portion of the Proposal. The total contract price is not considered confidential and will not be withheld from public inspection.

Proprietary information, such as all copyrighted material, trade secrets or other proprietary information, that Proposers claim should be held in confidence by the Owner, should be separately bound and labeled with the words "Proprietary Information",. Appropriate references to this separately bound information must be made in the body of the Proposal. Designating all or nearly all the Proposal as proprietary may result in the rejection of the Proposal. In the event a Proposer claims that any portion of the Proposal should be held in confidence by the Owner, the Proposer is required to owner in the Proposal that:

"The Proposer shall indemnify, defend and hold harmless the OWNER from and against any and all claims, demands, suits, actions, causes of action, judgments, liabilities, losses, damages, costs and

expenses (including reasonable attorney’s fees and litigation costs) arising from or related to the OWNER’s refusal to disclose copyrighted material, trade secrets or other information claimed to be proprietary by the Proposer to any person making a request therefore.”

Failure to include such a statement in its Proposal shall constitute a waiver of any right the Proposer may have to prevent the OWNER from disclosing information deemed proprietary by the Proposer.

The OWNER reserves the right to make use of any and all information or ideas contained in the Project Proposals.

I-11. RESTRICTION OF CONTACT. From the issue date of this RFP until a determination is made regarding the final selection of one ESCO, all contacts with Owner’s personnel concerning this RFP, must be made only through the Issuing Officer.

I-12. NEWS RELEASES. News releases and media contacts regarding this project will be only be made by Owner, unless Owner directs otherwise in specific instances.

I-13. PROPOSALS. The proposal is considered an intent to perform. The Technical Energy Assessment (TEA) with potential Energy Conservation Measure (ECM) improvements in the proposal which provides the preliminary construction budget with estimated energy savings and guaranteed energy savings (GES) provides a baseline. Any subsequent ESCO GES proposal needs to stay within 20% of the baseline with the exception or unforeseen conditions as negotiated with the Owner.

I-14. SITE VISITS. During the RFP process, Owner will arrange walk-through inspection tours of the Project Sites. Buildings, dates and times will be announced at the Pre-proposal conference (**see Part I-9**). Site representatives will be available to answer questions about the operation of facilities. Any technical information supplemental to material contained in this RFP will be made available for review and inspection.

PART II. RFP INFORMATION REQUIRED FROM ESCOS

Proposals are to be straightforward, concise presentations without extraneous material. An official authorized to bind the ESCO must sign the proposal. The proposal must remain valid for no less than ninety (90) calendar days from proposal submittal date. All Proposals become the property of the Owner. Proposals must be a complete response to the RFP Proposals shall address the items listed in Part IV, Evaluation Criteria for RFP and shall be limited to thirty (30) single-sided pages, excluding attachments. One original, XX (xx) copies and one (1) electronic pdf copy of the proposal, including attachments shall be submitted. The original copy shall contain original signatures of the signed documents. Font size may be no smaller than 10 point. No other distribution is to be made by the ESCO.

II-1. Proposal Attachments

Attachment A: ESCO Profile Form. Provide a complete response to the information requested in **Attachment A** to this RFP

Attachment A-1: Technical Energy Assessment (TEA). Provide complete responses to the information requested in **Attachment A-1** to this RFP

Attachment A-2: Sample Documents: Provide sample documents of the items listed below.

Sample Owner Savings Report Sample Project Commissioning Plan
Sample Measurement and Verification Plan Sample IGA

II-2. Attachment B: ESCO's Preliminary Project Cost and Cash Flow Analysis. Provide the information requested in **Attachment B** to this RFP. ESCOs are required to use and follow the instructions and submit the required information in the format found in **Attachment B** to this RFP.

II-3. Required Compliance Documentation

The ESCOs shall submit the following documents with their proposal due to the fast-track nature of the project schedule:

PART III. PROJECT SCHEDULE
(SUBJECT TO CHANGE AT THE DISCRETION OF Owner)

Activity Date

Issue RFP	Week 1
Pre-Proposal Conference	Week 2
Deadline for Preliminary Inquiries 10 am	Week 3
First Addendum Issued	Week 4
Facility Walk-Throughs	Weeks 3-5
Deadline for Written Inquiries 10 am	Week 7
Second Addendum Issued	Week 8
Proposals Due 4 pm	Week 10
Oral Interviews	Week 13
Notice of Selected ESCO	Week 14
IGA Contract Executed	Week 16
IGA Draft Due	Week 22
IGA Completed	Week 28
Energy Savings Performance Contract Negotiations	Weeks 29-33
Energy Savings Performance Contract Executed	Week 36

PART IV. EVALUATION CRITERIA FOR RFP

The criteria listed below will be used in the evaluation of the responses. Responses will be evaluated based on the completeness and quality of the information provided in the proposal, attachments, client references and oral interviews. Failure to provide any of the requested information may result in disqualification. Percentage weights for each category are indicated.

IV-1. Qualifications and Project Experience (30 points)

- Qualifications and experience of ESCO's personnel with guaranteed energy savings contracts on projects similar to the Owner's project.
- Reliability of equipment performance on past projects.
- Documented energy savings on past projects similar to the Owner's project.

- Quality and completeness of past project documentation.
- Quality of client references.

IV-2. Project Management (25 points)

- Clear assignment of responsibility for various project tasks to specific individuals.
- Ability to effectively manage project construction and complete the project on schedule and within budget.
- Quality of approach to operations and maintenance.
- Quality of monitoring, measurement and verification services, and reporting on past projects.
- Clarity, organization, and level of detail in written proposal.
- Quality of communication skills of the ESCO's representatives at the oral interview.
- Quality of maintenance on past projects.

IV-3. Technical Approach (25 points)

- Quality of technical approach, including methods of analysis and understanding of existing building systems and conditions.
- Quality of approach to project commissioning.
- Quality of sample investment grade audit for project similar to the Owner's project.
- Quality of baseline energy calculations and methodology for handling modifications/changes to the baseline.
- Quality of proposed training for facility staff.
- Quality of approach to savings measurement and verification.
- Quality of owner savings reports for similar clients to the Owner.
- Quality and feasibility of proposed preliminary technical measures.

IV-4. Financial Approach (10 points)

- Financial soundness and stability of ESCO.
- Capability to develop projects which qualify for attractive financing terms.
- Reasonableness of investment grade audit costs.
- Reasonableness of Preliminary Project Costs and Cash Flow Analysis.
- Cost of annual fees for measurement and verification of savings.

IV-5 Innovation (10 points)

- Quality of proposed innovative ECMs.
- Quality of benefits from innovative ECMs.
- Ability to implement innovative ECMs.

PART V. PROJECT TERMS AND CONDITIONS FOR IGA REPORT AND ESPC PROJECT

These sections describe the minimum conditions Owner will accept from the selected ESCO. **Part V-1 defines the Scope of Services, and Part V-2 defines Key Contractual Provisions.**

V-1. SCOPE OF SERVICES: (TECHNICAL REQUIREMENTS).

A. Owner reserves the right of final approval of any selected equipment or modifications proposed. Only prior reviewed and approved equipment and modifications will be permitted. Review and approval shall be conducted by Owner in a timely manner.

B. The selected ESCO will be required to work with current building management and maintenance

personnel, to coordinate construction and provide appropriate training in the operation of all retrofits. No equipment shall be installed that will require the hiring of additional personnel by Owner unless contract negotiations produce an explicit exemption from this rule for a specific installation.

C. The selected ESCO must provide two (2) complete sets and one (1) electronic pdf copy of reproducible "as built" and record drawings of all existing and modified conditions associated with the project, conforming to typical engineering standards. These should include architectural, mechanical, electrical, structural, and control drawings and operating manuals to be submitted within 30 days of the completed installation.

D. The selected ESCO shall be responsible for the proper removal and disposal offsite of all packaging materials and all replaced or demolished materials or equipment.

V-2. CONTRACTUAL PROVISIONS FOR IGA REPORT AND ESPC PROJECT

a) The contents of this RFP, the selected ESCO’s proposal, the final contract for the IGA report and the “Guaranteed Energy Savings (GES)” contract may become part of the contract for this ESPC project.

b) The selected ESCO must carry the level of insurance required by Owner for the IGA and the construction and operations phases.

a) The ESCO shall maintain in full force and effect during the life of this contract, liability and property damage insurance to protect its employees, contractor and subcontractors, if any, from claims for damages, for personal injury, accidental death and property damage which may arise from operations under this contract, whether such operations be by himself or by an contractor or subcontractor or anyone directly or indirectly employed by either of them. If any subcontractor is involved in the performance of the contract, the insurance policy or policies shall name the contractor or subcontractor as additional insured.

As an alternative to the ESCO providing insurance to cover operations performed by a subcontractor and naming the subcontractor as additional insured, ESCO may require subcontractor to provide its own insurance, which meets the requirements herein. It is understood that a subcontractor's insurance policy or policies are in addition to the ESCO's own policy or policies.

The following minimum insurance coverage(s) and limit(s) shall be provided by the ESCO, including its contractor or subcontractor(s) where appropriate. (Insert appropriate insurance coverage as required).

<u>Coverage</u>	<u>Limits</u>
Commercial General Liability	\$1,000,000 per occurrence/ Including Completed Operation \$2,000,000 aggregate
Automobile Liability	\$1,000,000 per accident
Professional Liability	\$1,000,000 per occurrence/ \$2,000,000 aggregate

Performance and Payments Amount of contract bond

Installation Floater Based upon cost of equipment

Each insurance policy required by this contract, including a subcontractor's policy, shall contain the following clauses:

1. "This insurance shall not be canceled, limited in scope of coverage or non-renewed until after 30 days written notice have been given to the Owner's issuing officer for this contract."
2. "The Owner is added as an additional insured as respects to operations performed for the Owner of Maryland." **(Not applicable to Professional Liability insurance.)**
3. "It is agreed that any insurance maintained by the Owner will apply in excess of, and not contribute with, insurance provided by this policy."

The minimum insurance required shall be in full compliance with the Maryland Insurance Code throughout the entire term of the contract, including supplemental agreements.

Upon ESCO's execution of a contract for an Investment Grade Audit or an ESPC Project, the ESCO agrees to deposit with the Owner certificate(s) of insurance necessary to satisfy the Owner that the insurance provisions of the contract has been complied with and to keep such insurance in effect and the certificate(s) therefore on deposit with the Owner during the entire term of construction phase work for the contract, including those of its subcontractor(s), where appropriate. Upon request by the Owner, the ESCO shall be responsible for furnishing a copy of the policy or policies.

Failure of the ESCO to provide and keep in force such insurance shall be regarded as material default under this contract, entitling the Owner to exercise any or all of the remedies provided in this contract for a default of the ESCO.

The procuring of such required insurance shall not be construed to limit the ESCO's liability hereunder nor to fulfill the indemnification provisions and requirements of this contract. Notwithstanding said policy or policies of insurance, the ESCO shall be obliged for the full and total amount of any damage, injury, or loss caused by negligence or neglect connected with this contract.

b) All drawings, reports and materials prepared by the ESCO in performance of the contract shall become the property of Owner and shall be delivered to Owner as needed or within 10 (ten) days after construction is completed and accepted by Owner that the project is fully installed and operating.

c) The selected ESCO must secure all necessary licenses and permits and comply with all federal, owner and county laws, rules and regulations with respect to this project. All work completed under this contract must be in compliance with all building codes and appropriate accreditation, certification and licensing standards.

d) The selected ESCO will be required to guarantee energy and cost savings on an annual basis. No credit for the achievement of savings above and beyond the annual guarantee will be credited to satisfy performance guarantees in future years of the contract. Annual reconciliation of the achieved savings will be required.

e) Open book pricing of all costs and mark-ups for labor, materials and services received during the project development, implementation and performance period phases of the project is required.

PART VI. ADDITIONAL INSTRUCTIONS FOR FUTURE CONTRACTS

VI-1. OWNER PARTICIPATION DURING THE IGA REPORT AND ESPC PROJECT. Owner shall review and approve equipment specifications and installation plans for all ECM prior to the implementation of any improvements or modifications. Owner approval shall be issued within 30 days of their receipt of the proposed ECM. During the implementation of ECM, Owner shall make routine inspections and be present during any equipment and systems commissioning procedures conducted by the selected ESCO and prior to the selected ESCO issuing of a Notice to Owner that it has installed and commenced operating all of the Equipment and systems.

VI-2 EXECUTION OF THE CONTRACT. Upon acceptance of the ESCO's proposal by the Owner, the ESCO shall provide satisfactory performance and payment bonds, within ten (10) calendar days after award of the GES contract or within such further time as granted by the Owner. No proposal or contract shall be considered binding upon the Owner until the contract has been fully executed by all parties.

VI-3 PERFORMANCE, LABOR AND MATERIAL PAYMENT BONDS. At the time of execution of the contract, and prior to the start of construction, the ESCO shall obtain good and sufficient performance and payment bonds covering the construction of the energy conservation measures (ECMs) described in the GES contract. The bond, shall be in an amount equal to one hundred percent (100%) of the total lump sum installation cost of construction of the ECMs. The bond will not be required to cover the operation and maintenance of the ECMs after construction is complete. The form and content of such bonds shall be in a form acceptable to the Owner.

Acceptable performance and payment bonds shall be limited to the following:

- a. Surety bonds underwritten by a company licensed to issue bonds in this Owner; or
- b. A certificate of deposit; credit union share certificate; or cashier's, treasurer's, teller's or official check drawn by, or certified check accepted by, and payable on demand to the Owner by the bank, a savings institution, or credit union insured by the Federal Deposit Insurance Corporation (FDIC) or the National Credit Union Association (NCUA).
 - 1) These instruments may be utilized only to a maximum of \$100,000.
 - 2) If the required security or bond amount totals over \$100,000, more than one instrument not exceeding \$100,000 each and issued by different financial institutions shall be acceptable.

If the ESCO fails to deliver the required performance and payment bonds, the ESCO's award shall be cancelled.

ATTACHMENT A

ESCO PROFILE FORM

NOTE: If this project is proposed to be implemented as a joint venture or partnership, this Attachment A should be completed for each firm, including client references for energy performance contracting projects implemented by each firm.

1. **Firm Name:** _

Owner:

Business Address:

City:

Zip Code:

a. **Names and Titles of Two Contact People**

1) Phone (_)

2) Phone (_)

b. **Submittal is for**

Parent Company (List any Division or Branch Offices to be involved in this project)

Division (attach separate list if more than one is to be included)

Subsidiary

Branch Office:

Name of Entity:

Address:

2. **Type of Firm** Corporation Partnership Sole Proprietorship Joint Venture

3. **Federal Employer Identification Number:** _

4. **Year Firm was Established:** _

5. **Name and Address of Parent Company, (if applicable)**

6. **Former Firm Name(s), (if applicable):** _

7. **Minority Business Enterprise**

Name of Project Team Member:	
Current Job Title: Job responsibilities: Number of years with ESCO: Primary Office Location:	
Employment History Company Name: Primary job responsibilities: Number of years with firm:	
Educational Background List all academic degrees, certifications, professional affiliations, relevant publications and technical training.	
List all guaranteed energy performance contracting projects this individual has been involved with during past 5 years. Include project location, type of facilities, year implemented and dollar value of installed project costs.	
Describe the specific role and responsibilities this individual had for each listed project.	
Provide a detailed description of the role and responsibilities this individual will have for the duration of this project.	
Describe any other relevant technical experience.	

Indicate the total years of relevant energy-related experience for this individual.	
---	--

- c. Submit an organizational chart that clearly identifies the roles and relationships of all key team members.
- d. Certify that your firm will comply with all terms and conditions contained in the Owner's Request for Proposals (RFP) and contract documents.
- e. Briefly describe the types of financing used by your firm for past energy performance contracts, including the source of funds and the potential dollar amounts currently available to your firm to finance these types of projects.

11. FINANCIAL REFERENCES

- a. Provide a company prospectus to include a Balance Sheet and Cash Flow ownerment not more than fifteen (15) months old.
- b. Please provide the name, address, and the telephone number of the firm(s) that prepared the Financial Ownerments.
- c. Please enclose banking references including financial institution, address, contact person, telephone number, and specific information on your firm's credit that may be used to fund construction for large-scale projects.
- d. Maximum individual project and aggregate bonding limits.
- e. Please certify that your company does not owe the State of Maryland any taxes.
- f. Please certify that your company is not currently under suspension or debarment by the of Maryland, any other owner, or the federal government.
- g. Please identify your firm's legal counsel for this project. Give the name and address of the primary individual responsible for contract negotiation.

1. PROJECT HISTORY & CLIENT REFERENCES

Using the following forms, list five (5) energy performance contracting projects currently in repayment and under contract with your firm which most resemble the scope of this project and list all energy performance contracting projects performed in the Owner. Limit your response to ONLY those projects that have been managed directly by the specific branch, division, office or any individual in such branch, division or office who will be specifically assigned to this project. Projects with installed costs of less than \$500,000 or single technology (e.g. lighting only, controls only, etc.) will not be considered. Attach additional sheets as necessary. Please put an asterisk by those project references involving buildings

similar to the building(s) described in Attachment C. All information is required.

Project Name, Location and Owner	
Project Dollar Amount (installed project costs)	
Primary ECMs Installed	
Date Construction Started	
Date Constructed Completed	
Guarantee Period Start & End Dates	
Dollar Value of <u>Projected</u> Annual Energy Savings	
Dollar Value of <u>Guaranteed</u> Annual Energy Savings	
Dollar Value and Type of Annual Operational Cost Savings (if applicable) (e.g., outside maintenance contracts, material savings, etc.)	
Method(s) of Savings Measurement and Verification	
Provide the names of the primary personnel involved in this project and their specific roles and responsibilities.	
Provide CURRENT and ACCURATE telephone and FAX numbers of the Owner(s)' representatives with whom your firm did business on this project. You should ensure that all representatives are familiar with this project.	

2. SUMMARY OF ENERGY SAVINGS PERFORMANCE DATA

For each project described above, complete the following table. Energy savings data must be provided in fuel units.

ANNUAL ENERGY SAVINGS

	<i>Projected</i>	Guaranteed	Achieved				
			Year 1	Year 2	Year 3	Year 4	Year 5
KWH							
KW							
Therms							
Water kGallons							
Other (Specify)							

ANNUAL ENERGY SAVINGS

	<i>Projected</i>	Guaranteed	Achieved				
			Year 1	Year 2	Year 3	Year 4	Year 5
KWH							
KW							

BTUs							
Water Gallons							
Other (Specify)							

ATTACHMENT A-1 ESCO's TECHNICAL ENERGY ASSESSMENT

Each respondent is required to fully answer all questions in each category listed below. Respondents must also include a Table of Contents, which indicates the section and page numbers corresponding to the information included. Failure to submit the required information as specified in this RFP will result in the deduction of points.

1. PROJECT MANAGEMENT

1.1 Project Summary.

Summarize the scope of services (design, financial, operations, maintenance, training, etc.) offered by your firm for this project including the added value to Owner of your firm's services.

1.2 Project Work Plan and Milestones.

Describe your proposed management plan for accomplishing the work. Provide a proposed project schedule and a sample timeline of milestones necessary to implement all phases of the project.

1.3 Training Provisions.

Describe your firm's proposed approach to providing technical training for facility personnel. Indicate the proposed number of personnel to be trained and the type and frequency of training to be provided for the duration of the contract. Indicate how your firm will address any turnover of key facility personnel as it relates to project performance.

1.4 Project Financing.

Describe your firm's preferred approach to providing or arranging financing for this project. Describe the structure of the financing arrangement including projected interest rate, financing term, repayment schedule, equipment ownership, security interest required, the responsibilities/liabilities of each party, and any special terms and conditions that may be associated with the financing of this project. Describe how construction will be financed.

2. SITE SPECIFIC

2.1 Technical Site Assessment.

Based upon your preliminary technical energy assessment and available information, discuss the site conditions, status of building systems, current operating procedures and potential cost-effective energy improvement opportunities. Describe any equipment modifications, installations or replacements at the facilities that you propose to implement and those which warrant further study. Describe any operational changes you would recommend. If innovative or exotic technologies are being proposed please provide information on previous installations on similar projects, including cost and performance results, and your company's in-house expertise or subcontractor relationship established to implement the technology.

2.2 Energy Baseline Calculation Methodology and Measurement and Verification Plan

Describe in the methods used to compute baseline energy use. Describe any computerized modeling programs used by your firm to establish baseline consumption. Please summarize procedures, formulas and methodologies including any special metering or equipment, your firm will use to measure and calculate energy savings for this project. Describe the methods used to adjust the guaranteed level of savings from any material changes that occur due to such factors as weather, occupancy, facility use changes etc. Indicate any operational cost savings opportunities and how such savings are to be identified, documented and measured.

Describe your firm's proposed approach to treatment of savings achieved during construction and how those savings will be documented and verified.

2.3 Equipment Maintenance Approach

Please describe any major changes in operations or maintenance for this project that your company anticipates. Include a description of the types of maintenance services projected for this project. Please discuss the role of Owner's personnel in performing maintenance on the new and existing equipment. Discuss the relationship of maintenance services to the savings guarantee, any required duration of the maintenance agreement and what impact termination of maintenance prior to the end of the contract term would have on the savings guarantee.

ATTACHMENT B

SAMPLE DOCUMENTS

Each ESCO shall provide sample documents of the items listed below:

Sample Owner Savings Report

Sample Project Commissioning Plan

Sample Measurement and Verification Plan

Sample IGA with Costs

ATTACHMENT C

OWNER

PROJECT SITE(S)

(Please insert addresses for the project site(s) listed)

ATTACHMENT D

OWNER

TECHNICAL FACILITY PROJECT(S)

ATTACHMENT E:

TECHNICAL FACILITY PROFILE(s)

SECTION I: GENERAL FACILITY DATA

Please use additional pages as required.

1. Name of Building:_____
 2. Address of Building:_____
 3. Primary Use :_____
 4. Building Engineer :_____
- Phone:_____

SECTION II: OPERATING DATA

1. Please describe the manufacturer(s), age, type and condition of the HVAC control system(s) used in the building(s).
2. If you have an operating Energy Management System (EMS) controlling your building, please list the manufacturer, year installed and operating conditions.

SECTION III: PHYSICAL DATA

1. Gross floor area (SF)
2. Weekly operating hours
3. # of workers on main shift
4. # of personal computers
5. Percent of floor area that is air conditioned (>=50%, <50%, or none)
6. Percent of floor area that is heated (>=50%, <50%, or none)

SECTION IV: ENERGY SYSTEMS DATA

Please provide as much of the following information as is available.

1. Briefly describe the major type(s) of HVAC system(s) serving your building (i.e.; terminal reheat, multizone, variable air volume, etc.) Indicate the main fuels used to operate the heating and cooling systems.
2. Estimate the percentage of total area lighted by fluorescent ballasts and bulbs, and incandescent bulbs. Estimate the approximate annual hours of operation for each type of lighting. If you have a significant amount of HID lighting, please describe it in similar terms. Indicate the percentage of fluorescent lighting, if any, which has been upgraded to electronic ballasts and T-8 lamps. Describe the age of existing fixture and ballast systems for each lighting type.

SECTION V: IMPROVEMENT OPPORTUNITIES

3. Briefly describe any serious equipment, operating, or comfort problems in your building(s). Identify any major mechanical, control or electrical systems scheduled for replacement during the next five years.

4. Briefly list any major energy conservation options identified by a previous analysis of your building.

SECTION VI: ENERGY AND WATER CONSUMPTION DATA

Please summarize utility consumption and costs for all fuel types, including water, over the last three (3) years for each project site using the forms that follow. If you are buying contract gas give your monthly price history, if available, on a separate sheet for your cost of gas. Please attach copies of all utility rate schedules that apply to your building.

ELECTRIC CONSUMPTION

Name of Facility:

Location:

Type of Fuel:

Name of Utility:

Billing Month/Yr.	# Days	Demand KW	# of KWH	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	Demand KW	# of KWH	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	Demand KW	# of KWH	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

NATURAL GAS

Name of Facility:

Location: Name of

Utility:

Billing Month/Yr.	# Days	# of Therms	# of CCF	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Therms	# of CCF	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Therms	# of CCF	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

WATER

Name of Facility:

Location:

Name of Utility:

Billing Month/Yr.	# Days	# Gallons	Sewage Charges	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# Gallons	Sewage Charges	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# Gallons	Sewage Charges	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

OTHER

Name of Facility:
 Location: Type of
 Fuel:
 Name of Utility:

Billing Month/Yr.	# Days	# of Units (Specify)	Other charges (if applicable)	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Units (Specify)	Other charges (if applicable)	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

Billing Month/Yr.	# Days	# of Units (Specify)	Other charges (if applicable)	Total Cost
Jan.				
Feb.				
Mar.				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
TOTALS				

SITE BASELINE DATA COLLECTION

Please provide as much of the following information as is available.

1. What is your current annual maintenance budget?
2. What is the total square footage managed with that budget?
3. What is your current maintenance budget for internal staff (salaries and benefits)?
4. What is your annual budget for external maintenance contracts?
5. What is the average number of square feet managed per maintenance staff person?
6. What is your current estimate of deferred maintenance in total dollars and dollars per square foot?
7. What is your current capital budget allocation as a percentage of your total capital budget requests?
8. What is the total annual number of facility maintenance complaints?

9. What is the total number of occupants in the building?
10. What is the average number of square feet of building space per building occupant?
11. What is the average number of annual sick days per worker?
12. What is the annual number of voluntary worker resignations?
13. Please estimate the percentage of your annual maintenance budget that is spent on corrective or reactive maintenance.
14. Please estimate the percentage of your annual maintenance budget that is spent, on preventative, predictive, or proactive maintenance.
15. Can you identify any specific building system that has a potentially large negative impact on employee health, productivity or morale? If yes, what is that building system?
16. Do you currently track indoor air comfort and air quality complaints?
17. Do you survey building occupants annually as to IAQ, comfort, and lighting?

APPENDIX D INVESTMENT GRADE AUDIT AGREEMENT

This Energy Audit Agreement is entered into on _____ 200_, by and between (the "Owner") and (the "Company"). The Owner and the Company are referred to herein as the "Parties".

Whereas, the Owner has issued a Request for Proposals (RFP) to identify a qualified Energy Service Company (ESCO) to implement an energy performance contract (EPC);

Whereas, the Company submitted a response to the RFP and participated in a competitive procurement process designed by the Owner to identify a qualified ESCO;

Whereas, the Owner has selected the Company as a result of its competitive procurement process;

Whereas, the Owner is responsible for the operation, management and maintenance of _____ (the "Facility");

Whereas, a comprehensive energy use and savings analysis (the "Energy Audit") must be performed at the Facility in order to determine the feasibility of entering into an Energy Performance Contracting Project to provide for the installation and implementation of energy conservation measures (ECMs) at the Facility;

Whereas, if the ECMs are demonstrated to be feasible, and if the amount of energy savings can be reasonably ascertained and guaranteed in an amount sufficient to cover all costs associated with an energy performance contracting project at the Facility, the Parties intend to negotiate a Guaranteed Energy Savings (GES) contract under which the Company shall design, procure, implement, provide training, maintain and monitor such energy conservation measures at the Facility;

Therefore, the Parties agree as follows:

ARTICLE 1: SCOPE OF ENERGY AUDIT

The Company will perform the Energy Audit and prepare a detailed engineering and economic report (the "Report") which specifically identifies the energy improvements and operational changes which are recommended to be installed or implemented at the Facility. The Report shall contain detailed projections of energy and cost savings to be obtained at the Facility as a result of the installation of the recommended energy conservation measures (ECMs). The savings calculations must utilize assumptions, projections and baselines which best represent the true value of future energy or operational savings for the Facility, including accurate marginal cost for each unit of savings at the time the audit is performed; documented material and labor costs actually avoided; adjustments to the baseline to reflect current conditions at the Facility, compared to the historic base period; calculations which account for the interactive effects of the recommended ECMs; etc. The Report shall clearly describe how utility tariffs were used to

calculate savings for all ECMs. The Report shall describe the Company's plan for installing or implementing the measures in the Facility, including all anticipated costs associated with such installation and implementation. The primary purpose of the Report is to provide an engineering and economic basis for negotiating a GES contract between the Owner and the Company; however, the Owner shall be under no obligation to negotiate such a contract.

The Company shall perform the following tasks in performing the Energy Audit and preparing the Report:

A. Collect General Facility Information

The Company shall collect general Facility information such as: size, age, construction type, condition and general use of the Facility. The Company shall also collect and summarize Facility utility cost and consumption data for the most recent 36-month period. Company shall evaluate the impact on utility cost and consumption for any energy measures currently being installed or currently contemplated to be installed by the Owner in the Facility which will remain separate from the Energy Services Agreement for the duration of that agreement.

Owner shall furnish (or cause its energy suppliers to furnish) all available records and data concerning energy and water usage for the Facility for the most current 36 month period, if available, including: Utility records; occupancy information; descriptions of any changes in the structure of the Facility or its heating, cooling, lighting or other systems or energy requirements; descriptions of all major energy and water consuming or energy and water saving equipment used in the Facility; and, description of energy management procedures presently utilized. The Facility shall also furnish a record of any energy related improvements or modifications that have been installed during the past three years, or are currently being installed or are currently contemplated to be installed by the Owner in the Facility separate from the Energy Service Agreement for the duration of that agreement. The Owner shall also provide copies of drawings, equipment logs and maintenance work orders to the Company insofar as this information is readily available.

B. Inventory Existing Systems and Equipment

Company shall compile an inventory based on a physical inspection of the major electrical and mechanical systems at the Facility, including:

Cooling systems and related equipment Heating and heat distribution systems

Automatic temperature control systems and equipment Air distribution systems and equipment

Outdoor ventilation systems and equipment

Kitchen and associated dining room equipment, if applicable Exhaust systems and equipment

Hot water systems

Electric motors 5 HP and above, transmission and drive systems Interior and exterior lighting

Laundry equipment, if applicable

Water consumption end uses, such as restroom fixtures, water fountains, irrigation, etc. Other major energy using systems, if applicable

The inventory shall address the following considerations:

1. The loads, proper sizing, efficiencies or hours of operation for each system; (Where measurement costs, facility operating or climatic conditions necessitate, engineering estimates may be used, but for large fluctuating loads with high potential savings, appropriate measurements are required unless waived by the Owner).
2. Current operating condition for each system;
3. Remaining useful life of each system;
4. Feasible replacement systems
5. Hazardous materials and other environmental concerns

The Company shall use data loggers and conduct interviews with Facility operation and maintenance staff regarding the Facility's systems operation, occupancy patterns and problems with comfort levels or equipment reliability.

C. Establish Base Year Consumption and Reconcile with End Use Consumption Estimates

Company shall examine the most recent 36 months of utility bills and establish Base Year consumption for electricity, fossil fuels and water by averaging; or selecting the most representative contiguous 12 months. Company shall consult with Facility staff and account for any unusual or anomalous utility bills which may skew Base Year consumption from a reasonable representation.

Company shall estimate loading, usage and/or hours of operation for all major end uses representing more than 5% in aggregate of total Facility consumption including, but not limited to:

Water Lighting Heating
Cooling
HVAC motors (fans and pumps) Plug load
Kitchen equipment Other equipment
Miscellaneous

Where loading and/or usage are highly uncertain Company shall employ spot measurement and/or short term monitoring at its discretion, or at the request of the Owner. Reasonable applications of measurement typically include variable loads that are likely candidates for conservation measures, such as cooling equipment. The annual end use estimated consumption shall be reconciled with the annual Base Year consumption to within 5% for electricity (kWh), fossil fuels and water. The contribution to electric peak demand for each end use shall also be reconciled to within 5% of the annual Base Year peak. The "miscellaneous" category shall not be more than 5%. The purpose of this is to place reasonable limits on potential savings.

D. Develop List of Potential Energy Conservation Measures (ECMs)

The Company shall:

1. Identify and propose potential ECMs for installation or implementation at the Facility(s), including cut sheets on proposed equipment.¹ For non-standard ECMs provide information regarding product site installations.
2. Provide a detailed estimate of the cost, savings and life expectancy of each proposed ECM.
3. Specify Facility(s) operations and maintenance procedures which will be affected by the installation/implementation of the proposed ECMs.
4. Provide analysis methodology, supporting calculations and assumptions used to derive baselines (e.g. lighting operating hours) and estimate savings. Provide the existing and proposed air and hot water temperatures, amount of outdoor air ventilation (CFMs) lighting and acoustic levels. Provide copies of the utility tariffs and commodity price histories used in savings calculations. Manual calculations should disclose essential data, assumptions, formulas, etc. so that a reviewer could replicate the calculations based on the data provided.
5. For savings estimates using computer simulations, the Company shall provide access to the program and all inputs and assumptions used, if requested by the Agency.
6. Provide a detailed preliminary savings measurement and verification plan for each proposed ECM.
7. Provide a detailed preliminary commissioning plan for the proposed ECMs.
8. Provide detailed calculations for any rate saving proposals.
9. Provide detailed supporting calculations for any proposed maintenance, material or other operational savings. Describe annual variances in savings from year to year (e.g. lighting, warranties).
10. Estimate any environmental costs or benefits of the proposed ECMs (e.g. disposal costs, avoided emissions, water conservation, etc.). Provide emissions reductions data for NOX, CO2 and SO2. Segment emissions data for direct site emissions reductions (e.g. fossil fuels) and indirect emissions reduction data (e.g. electricity/water).
11. For all proposed ECMs, Company shall comply with all applicable owner, federal and local codes and regulations in effect at the time of this analysis.

This list shall be compiled and submitted to the Owner within ____ days (120 days is recommended) of the execution of this Project Development Agreement.

E. Select Final Recommended ECMs

¹ (Optional) ECMs of particular interest to Agency are specified in Attachment A and should be addressed in the Report. The attached list is not intended to be exhaustive nor limit the Company's evaluation and development of a comprehensive list of potential ECMs.

Company shall, in consultation with the Owner, recommend specific ECMs from its preliminary compilation for installation and implementation at the Facility.

F. Cost and Fee Estimates

Company shall provide detailed estimates of costs associated with the installation, implementation and commissioning of each of the ECMs proposed in the Audit including breakouts for labor, materials, and equipment.

Company shall also provide estimates of monthly costs associated with sustaining the project performance including breakouts for maintenance fees, monitoring fees, and training fees.

G. Savings Estimates

The Owner has endeavored to provide the Company with sufficient general and specific guidance in this Article 1 to develop the savings estimates for the Report. In the event that questions arise as to the calculation of savings or whether certain items will be allowed as savings, the Company should seek written guidance from the Owner. The Owner reserves the right to reject items claimed as savings which are not in the Owner's utility budget line or which have been claimed contrary to the guidance given in this agreement or contrary to written guidance given to Company. The Owner also reserves the right to reject Company calculations of savings when it determines that there is another more suitable or preferable means of determining or calculating such savings.

For the purposes completing the Cash Flow Analysis in Attachment B, the following items will be allowed as savings or in the development of savings:

Escalation rates of	% for natural gas ²
Escalation rates of	% for electricity
Escalation rates of	% for oil
Escalation rates of	% for steam
Escalation rates of	% for water
Escalation rates of	% for other fuel type (specify)
Escalation rates of	% for operation and maintenance cost savings
Escalation rates of	% for material/commodity cost savings
Escalation rates of	% for allowable labor savings

The following items will not typically be credited as savings derived from a proposed ECM. The Company may seek exemptions from the Owner on a case-by-case basis. However, the final determination of allowable savings in each case considered shall reside with the Owner:

**Owner in-house labor cost
Owner deferred maintenance cost
Offset of future Owner capital cost**

H. Report Format

The Company shall prepare a two-volume report as follows:

² It should be noted that the base rate value for each fuel and water unit will not devalue in the event of any rate decrease. The owner reserves the right to impose ceiling rates for fuel escalations.

Each volume should be submitted using 8 ½ " x 11" sheets of paper and a font size no smaller than 10 point. The pages in each volume should be numbered sequentially, include a Table of Contents and tabbed with the visible titles of corresponding Schedules (Volume 1) or Sections (Volume 2).

Volume 1 of 2 shall include the presentation of information in the following Schedules required for the GES contract to the extent the information has been developed during the course of performing the audit. Preliminary information and incomplete schedules will be finalized during audit negotiations, prior to execution of the GES contract.

Schedules

Schedule A	Equipment to be Installed by Company
Schedule B	Energy Savings Guaranty
Schedule C	Compensation to ESCO
Schedule D	Description of the Premises
Schedule E	Calculation of Baseline/Benchmarks; Methodology to Adjust Baselines
Schedule F	Financing Agreement
Schedule G	Company Maintenance Responsibilities
Schedule H	Owner Maintenance Responsibilities
Schedule I	ECMs Operation Parameters/Standards of Comfort and Service
Schedule J	Company Training Responsibilities
Schedule K	Construction and Installation Schedule
Schedule L	Current and Known Future Capital Projects at the Premises
Schedule M	Pre-Installation Equipment Inventory
Schedule N	Methods of Savings Measurement and Verification
Schedule O	Systems Startup and Commissioning of ECMs
Schedule P	Alternative Dispute Resolution Procedures
Schedule Q	Insurance and Bonds
Schedule R	Warranties
Schedule S	Proposed Final Project Costs & Final Project Cash Flow Analysis (See Attachment B at the end of this Energy Audit Agreement)

Exhibits

Exhibit I	Performance Bond/Construction Bond
Exhibit II (i)	Certificate of Acceptance—Energy Audit Report
Exhibit II (ii)	Certificate of Acceptance—Installed Equipment

Volume 2 of 2 shall include all of the information required in Section D and the Sections below, and presented in the following format:

1. **Executive Summary:** Provide an executive summary which describes the Facility(s), measures evaluated, analysis methodology, results and a summary table presenting the cost and savings estimates for each recommended measure. Include a summary of the recommended measures and costs using the table format provided below.

	ECM	TOTAL COST	ENERGY COST SAVINGS	SIMPLE PAYBACK
1.				
2.				
3.				
TOTALS				

2. **Measures Not Evaluated:** Include a discussion of measures not evaluated in detail and the explanation of why a detailed analysis was not performed.
3. **Baselines:** Provide a summary of all utility bills, consumption baselines and how they were established, and end use reconciliation with respect to the baselines including a discussion of any unusual characteristics and findings.
4. **ECM Summaries:** Provide detailed descriptions for each ECM including analysis method, supporting calculations (may be submitted in appendices), results, proposed equipment and implementation issues. Provide a financial analysis for each proposed ECM (See Section F).
5. **Cost and Savings Estimates:** Conclusions, observations and caveats regarding cost and savings estimates.
6. **Appendices:** Provide thorough appendices which document the data relied upon to prepare the analysis and how that data was collected.

Submission of the Report

The Report shall be completed within days (*120 days is recommended*) of the date of execution of this Energy Audit Agreement. The cost for the completed Energy Audit and Report will be .

ARTICLE 2: GUARANTEED ENERGY SAVINGS (GES) CONTRACT

The Parties intend to negotiate a GES contract under which the Company shall design, install and implement energy conservation measures which the Parties have agreed to and provide certain training, maintenance and monitoring services. However, nothing in this Agreement should be construed as an obligation on any of the Parties to execute such a GES contract. The terms and provisions of such a GES contract shall be set forth in a separate agreement.

ARTICLE 3: PAYMENT

Payment to Company for services performed in connection with the Energy Audit Agreement shall be made by Owner only in accordance with the provisions of Article 4 herein.

ARTICLE 4: TERMINATION

A. By Contractor:

Company may terminate this Agreement prior to the completion of the Energy Audit and Report or subsequent to the scheduled completion of the Energy Audit and Report if:

(i) it determines that it cannot guarantee a minimum _
% savings in energy costs

through the implementation of an energy performance contracting project at the Facility; or

(ii) it determines that even though it can guarantee a _
% savings in energy costs, that

amount would be insufficient to cover the costs associated with performing the Audit, installing energy conservation measures and related training, maintenance and monitoring services.

In the event Company terminates the Agreement pursuant to Section 4 A (i) or (ii) the Owner shall not be obligated to pay any amount to Company for services performed or expenses incurred by Company in performing the Energy Audit and Report required under this Agreement. Company shall provide the Facility with any Audit documents (preliminary notes, reports or analysis) which have been produced or prepared prior to the effective date of the termination. Company will return any documents or information that was provided by the Owner.

Termination under this section shall be effective upon Owner 's receipt of written notification from the Company stating the reason for the termination and all documents which support termination pursuant to 4 A (i) or 4 A (ii) herein.

B. By Owner:

Owner may terminate this Agreement:

(i) If the Company fails to complete the Energy Audit and deliver the Report to the Owner by the date established in Article 1 H. above; or fails to obtain a written extension of that date from the Owner. Termination under this subsection B (i) shall be effective upon Company's receipt of written notification from the Owner that the deadline for submission of the Energy Audit and Report has past. In this event, the Owner shall not be obligated to pay any amount to Company for services performed or expenses incurred by the Company in performing the Energy Audit and preparing the Report required under this Agreement. Company shall provide the Facility with any Audit documents (preliminary notes, reports or analysis) which have been produced or prepared prior to the effective date of the termination. Company will return any documents or information that was provided by the Owner.

(ii) If, prior or subsequent to the completion of the Energy Audit or Report, the Company notifies the Owner in writing that it is unable to guarantee a sufficient level of savings pursuant to subsection 4 A (i) or (ii) above. Termination under this subsection B (ii) shall be effective upon Company's receipt of written notification of termination from the Owner. In this event, the Owner shall not be obligated to pay any amount to Company for services performed or expenses incurred by Company in performing the Energy Audit and preparation of the Report required under this Agreement. Company shall provide the Facility with any Audit documents (preliminary notes, reports or analysis) which have been produced or prepared prior to the effective date of the termination. Company will return any documents or information that was provided by the Owner.

(iii) If, prior or subsequent to the completion of the Energy Audit or Report, the Owner notifies the Company in writing that it has elected to terminate this Agreement and not enter into a GES contract, the Owner shall reimburse the Company for either the actual expenses incurred or percent of the Audit and Report completed as of the effective date of the termination, the amount being determined as fair and equitable by the Owner. Termination under this subsection B (iii) shall be effective upon Company's receipt of written notification from the Owner.

Company agrees to provide the Owner with any records of expenses incurred and any preliminary notes, reports or analyses which have been produced or prepared prior to the effective date of the termination. Such documentation shall be used by the Owner to determine the extent of work completed by Company prior to termination and shall become the property of the Owner.

If after completion and acceptance of the Energy Audit, the Owner does not enter into a GES contract with the Company within ___ days (**60 days is recommended**) after written acceptance of the Energy Audit, the Owner agrees to reimburse the Company for the cost of the Energy Audit as detailed herein. Termination under this subsection B (iii) shall be effective upon Company's receipt of written notification from the Owner. The Energy Audit and Report will become the property of the Owner.

It is clearly understood by both parties hereto that, if the Parties successfully negotiate and execute an Energy Services Agreement, no payment shall be due for the Energy Audit or Report under the terms of this Agreement. This Agreement shall automatically terminate upon the execution of a GES contract by Company and the Owner for an energy performance contracting project at the Facility. It is further understood that provisions for payment for the Energy Audit shall be incorporated into the GES contract.

ARTICLE 5: STANDARD TERMS AND CONDITIONS

SECTION 1. Agreement Term

The Agreement term shall commence on the date the Agreement is executed by the Owner and end on ___, unless earlier terminated pursuant to the provisions of Article 4 hereof. Notwithstanding, Company shall adhere to the deadlines set forth in Article 1 regarding the completion and submittal of the list of ECMs and the Report.

SECTION 2. Materials, Equipment and Supplies

The Company shall provide or cause to be provided all facilities, materials, equipment and supplies necessary to perform the Energy Audit and prepare the Report.

SECTION 3. Patent and Copyright Responsibility

The Company agrees that any material or design specified by the Company or supplied by the Company pursuant to this Agreement shall not knowingly infringe any patent or copyright, and the Company shall be solely responsible for securing any necessary licenses required for patented or copyrighted material utilized by the Company in the performance of the Energy Audit and preparation of the Report.

SECTION 4. Owner Access to Records

The Owner shall have the right, throughout the term of this Agreement and for a minimum of ___ years following completion of the Agreement, to inspect, audit and obtain copies of all books, records and supporting documents which Company is required to maintain according to the terms of this Agreement.

SECTION 5. Personnel

All personnel necessary for the effective performance of the Energy Audit shall be employed by Company and its designated subcontractors, shall be qualified to perform the services required under this Agreement, and shall in all respects be subject to the rules and regulations of Company governing staff members and employees. Neither Company, its designated subcontractors, nor its personnel shall be considered to be agents or employees of the Owner.

SECTION 6. Compliance with Applicable Law

In performance of its obligations pursuant to this Agreement, Company shall comply with all applicable provisions of federal, owner and local law. All limits or standards set forth in this Agreement to be observed in the performance required under this Agreement are minimum requirements, and shall not affect the application of more restrictive federal, owner or local standards applied to the performance of the Agreement.

SECTION 7. Waivers

No right of either party hereto shall be deemed to have been waived by non-exercise thereof, or otherwise, unless such waiver is reduced to writing and executed by the party entitled to exercise such right.

SECTION 8. Assignment

This Agreement may not be assigned by the Company without the prior written consent of the Owner.

SECTION 9. Federal Taxpayer Identification Number and Legal Status Disclosure

Under penalty of perjury, the Company certifies that ___ is the Company's correct Federal Taxpayer Identification Number and that the Company is doing business as a Corporation.

SECTION 10. Governing Law

This Agreement shall be governed by and construed only in accordance with the laws of the State of Maryland.

SECTION 11. Agreement

The following documents are incorporated in, and made a part of, this Agreement:

Attachment A - Facility's Recommended ECMs (Optional)

Attachment B – ESCO Cost Proposal and Project Cash Flow Analysis

(Note: Owner should include all required policy provisions which may include the following:)

Attachment I - Drug Free Workplace Provisions Attachment II - Equal Employment Opportunity Clause

Attachment III - Certification of Capacity to Contract Attachment IV- Americans with Disabilities Act
Attachment V- Certifications

SECTION 12. Project Management

All necessary and ordinary communications, submittals, approvals, requests and notices related to Project work shall be issued or received by:

For Owner: For Company:

SECTION 13. Amendments

This Agreement and Attachments referenced in Section 11 herein constitute the entire Agreement between the Parties. No amendment hereof shall be effective until and unless reduced to writing and executed by the Parties.

ARTICLE 6: EXECUTION

IN WITNESS WHEREOF, the parties have executed this Agreement this _
day of ___, 20__.

OWNER
BY:
TITLE:

COMPANY
BY:
TITLE:

**ATTACHMENT A
ESCO's Proposed Project Costs and Cash Flow Analysis**

Project Name:
Agency Name: ESCO Name:

Fee Category	Fees ⁽¹⁾ Dollar (\$) Value	Percentage of Hard Costs
Estimated Value of Hard Costs^{(2):}		
Project Service Fees		
Investment Grade Energy Audit		
Design Engineering Fees		
Construction Management		
System Commissioning		
Initial Training Fees		
Contingency Costs		
Construction Interest		
Project Service Fees Sub Total		
TOTAL FINANCED PROJECT COSTS:		

PROPOSED ANNUAL SERVICE FEES

First Year Annual Service Fees	Fees ⁽¹⁾ Dollar (\$) Value	Percentage of Hard Costs
Measurement and Verification		
ENERGY STAR™ Services		
Maintenance		
Performance Monitoring		
On-going Training Services		
Verification Reports		
TOTAL FIRST YEAR ANNUAL SERVICES		

NOTES:

1. Fees should include all mark-ups, overhead, and profit. Figures owned as a range will not be accepted.
2. The total value of Hard Costs is defined in accordance with standard AIA definitions that include: Labor Costs, Subcontractor Costs, Cost of Materials and Equipment, Temporary Facilities and Related Items, and Miscellaneous Costs such as Permits, Bonds Taxes, Insurance, Mark-ups, Overhead and Profit, etc.

ESCO's proposed interest rate available at the time of submission:
Financial Institution:
Contact person:

**ATTACHMENT A
ESCO's PROPOSED ANNUAL CASH FLOW ANALYSIS**

For the purposes of preparing the Preliminary Cost Proposal and Preliminary Cash Flow Analysis, a 20-year contract term and interest rate of _ % must be used.

Financed Project Costs: _
Escalation Rate by Utility/Fuel ^(To be furnished by Agency)
Finance Term:
Electric:
Annual Interest Rate:
Construction Months:
Annual Payment:
Principal:
Interest:
Water:
Other (specify):
Escalation Rate for Annual Fees:

Year	Electric Cost Savings	Water Cost Savings	Other	Operational Cost Savings	Total Cost Savings	Maintenance, Monitoring, EM&V, and Training Fees	Guaranteed Cost Savings	Financing Payment	Net Savings

1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Total									

**ATTACHMENT B -- FACILITIES RECOMMENDED ECM'S
(Optional)**

Default, and the intention of the **AGENT** to terminate this Agreement, shall be provided to the **COMPANY** and such decision shall be final and effective upon the **COMPANY'S** receipt, as defined

herein, of such notice. Upon the giving of such notice as provided herein, the **COMPANY** must discontinue any **SERVICES**, unless otherwise directed in the notice, and deliver all materials accumulated in the performance of this Agreement, whether completed or in process, to the **AGENT**. At such time the **AGENT** may invoke any or all of the following remedies:

- (A)) The right to take over and complete the **WORK**, or any part thereof.
- (B)) The right to immediately terminate this Agreement as to any or all of the **WORK** or other services yet to be performed by the **COMPANY**;
- (C)) The right of specific performance, injunctive relief or any other appropriate equitable remedy;
- (D)) The right to money damages;
- (E)) The right to withhold all or any part of the **COMPANY'S** compensation hereunder; and If the **AGENT** considers it to be in its best interests, it may elect not to declare default or to terminate this Agreement. The parties acknowledge that this provision is solely for the benefit of the **AGENT** and that if the **AGENT** permits the **COMPANY** to continue to perform the **WORK** and other **SERVICES** despite one or more **Events of Default**, the **COMPANY** shall in no way be relieved of any of its responsibilities, duties, or obligations under this Agreement nor shall the **AGENT** waive or relinquish any of its rights.

The remedies under the terms of this Agreement are not intended to be exclusive of any other remedies provided, but each and every such remedy shall be cumulative and shall be in addition to any other remedies, existing now or hereafter, at law, in equity or by statute. No delay or omission to exercise any right or power accruing upon any Event of Default shall impair any such right or power nor shall it be construed as a waiver of any Event of Default or acquiescence therein, and every such right and power may be exercised from time to time and as often as may be deemed expedient.

11.2 Right to Offset

Any additional costs incurred by the **OWNER** in the event of termination of this Agreement for default or otherwise resulting from the **COMPANY'S** performance or non-performance under this Agreement, including the exercise by the **OWNER** of any of the remedies available to it under **Article 11.4** hereof, and any credits due to the **OWNER** (such as available balance in authorized project contingency allowance under the GESA contract) or overpayments made by the **AGENT** may be offset by use of any payment due for the **WORK** or other services completed before the termination for default or before the exercise of any remedies. If such amount offset is insufficient to cover such excess costs, the **COMPANY** shall be liable for and promptly remit to the **OWNER** the difference upon written demand therefore. This right to offset is in addition to and not a limitation of any other remedies available to the **OWNER**.

Article 12: Representations and Warranties

12.1 Each party warrants and represents to the other that:

- (A)) It has all requisite power, authority, licenses, permits, and franchises, corporate or otherwise, to execute and deliver this Agreement and perform its obligations hereunder;
- (B)) Its execution, delivery, and performance of this Agreement have been duly authorized by, or are

in accordance with, its organic instruments, and this Agreement has been duly executed and delivered for it by the signatories so authorized, and it constitutes its legal, valid, and binding obligation;

(C) Its execution, delivery, and performance of this Agreement will not result in a breach or violation of, or constitute a default under, any agreement, lease or instrument to which it is a party or by which it or its properties may be bound or affected; and

(D) It has not received any notice, nor to the best of its knowledge is there pending or threatened any notice, of any violation of any applicable laws, ordinances, regulations, rules, decrees, awards, permits or orders which would materially and adversely affect its ability to perform hereunder.

12.2 Representations and Warranties by the OWNER

The **AGENT** and the **OWNER** hereby warrants and represents to the **COMPANY** that:

(A) It will provide throughout the term of this Agreement (or cause its energy suppliers to furnish) to the **COMPANY**, upon its request, copies of all available records and data concerning energy usage for the Premises including but not limited to the following data: utility records and rate schedules; occupancy information; descriptions of any major changes in the structure or use of the buildings or heating, cooling, lighting or other systems or energy requirements; descriptions of all energy consuming or saving equipment used in the Premises; descriptions of energy management procedures presently utilized; and any prior energy analyses of the Premises. The **AGENT** and the **OWNER** shall make knowledgeable employees and agents available for consultations and discussions with the **COMPANY** concerning energy usage of the Premises.

(B) It has not entered into any leases, contracts, or agreements with other persons or entities regarding the leasing of energy efficiency equipment or the provision of energy management services for the Premises or with regard to servicing any of the energy related equipment located in the Premises.

12.3 Representations and Warranties by the COMPANY

The **COMPANY** represents and warrants the following to the **OWNER** (in addition to the other representations and warranties contained in the Project Documents), as an inducement to the **OWNER** to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement and the Final Completion of the **WORK**.

(A) That it is financially solvent, able to pay its debts as they mature and possessed of sufficient working capital to complete the **WORK** and perform its obligations under this Agreement;

(B) That it and each of its employees, agents and subcontractors of any tier are competent to perform its obligations under this Agreement;

(C) That it is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the **WORK** and perform its obligations hereunder and has sufficient experience and competence to do so;

(D) That it is authorized to do business in the State of Maryland and is properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over it and over the

WORK and the Premises;

(E) That its execution of this Agreement and its performance thereof is within its duly authorized powers; and

(F) That its duly authorized representative has visited the Premises, familiarized itself with the local conditions under which the **WORK** is to be performed and correlated its observations with the requirements of the **PROJECT DOCUMENTS**.

Article 13: Applicable Laws

13.1 Statutory and Regulatory Requirements

All applicable Federal and Owner laws and the County codes, rules and regulations of all authorities having jurisdiction over the performance of the **PROJECT** shall apply to this Agreement throughout its term and they will be deemed to be included in this Agreement the same as though written herein in full. To assist in **COMPANY'S** tax compliance, upon job completion the **OWNER** agrees, if applicable, to execute the required Written Allocation including the Declaration related to **Section 179D of the Internal Revenue Code**. **COMPANY** will be responsible for preparing the Declaration, all accompanying documentation and the contents therein. **COMPANY** will be designated the sole **Section 179D beneficiary**.

13.2 COMPANY'S Failure to Comply with Statutory and Regulatory Requirements

The **COMPANY**, and its subcontractors shall comply with all laws, rules, regulations, and codes applicable to performance of the **WORK** and the maintenance, monitoring, and training services to be performed pursuant to **Article 6**. Except where expressly required by applicable laws and regulation, the **OWNER** shall not be responsible for monitoring the **COMPANY'S** compliance with any laws or regulations. When the **COMPANY** observes conflicting regulatory requirements, it shall notify the **AGENT** in writing immediately. If the **COMPANY** performs any of the **WORK** or other **SERVICES** required by this Agreement knowing or having reason to know that the **WORK** or such **SERVICES** are contrary to such laws, rules and regulations, the **COMPANY** shall pay all costs arising there from.

Article 14: Right to Audit

The **OWNER** shall have the right to have access to and audit all of the **COMPANY'S** records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to this Agreement. In addition, the **AGENT** or its authorized representative shall have access to the **COMPANY'S** facilities and shall be provided adequate and appropriate workspace, in order to conduct audits in compliance with this article.

Article 15: Approval

This Agreement shall not be executory until all necessary Owner approvals are obtained.

IN WITNESS WHEREOF, the duly authorized officers or representatives of the Parties have set their hand on the date first written above with the intent to be legally bound.

AGENT

SWORN TO AND SUBSCRIBED BEFORE ME THIS
_ DAY OF , 20 .

Notary Public

APPROVED AS TO FORM:

OWNER

Director

SWORN TO AND SUBSCRIBED BEFORE
ME THIS __DAY OF , 20 .

Notary Public

APPROVED AS TO FORM:

COMPANY

SWORN TO AND SUBSCRIBED BEFORE ME THIS
DAY OF , 20 .

Notary Public

APPENDIX E

SAMPLE MEASUREMENT AND VERIFICATION AND COMMISSIONING PLAN

Year 1 – Measurement & Verification Plan

The M&V Plan developed using IPMVP Option “A” is to be used for savings determination. For this ECM, partial measurement is deemed to provide adequate accuracy since there are multiples of similar lighting fixtures (lamps, ballasts) throughout the project.

An outline of the plan is shown below –

- The boundary of this ECM was drawn to include the lighting circuits fed by the 277 volt supply;
- The base year conditions are those of the time period immediately preceding the decision to proceed with the project. They include description, location and number of lamps ballasts, and fixtures as shown through the line-by-line audit;
- The lighting operating periods of the post-retrofit period are selected as the common set of conditions for the energy use terms in Equation 1 mentioned in the introductory paragraph of this section;
- The operating hours utilized for this ECM will be stipulated on the basis of the:
 - a) Information provided by the owner

The following operating hours are stipulated for hour groups specific to the facility operations and energy usage:

Annual Hours of Operation		Diversity
Hour Groups	Annual Hours	Factor
East Wing Building	2860	0.85
Finance Office Building	2860	0.85
Forum Office Building	2860	0.85
Irvis Office Building	2860	0.85
North Office Building	2860	0.85
Central Plant	2860	0.85
Tunnel Mechanical	8760	0.85
Mechanical Room & Janitor Closets	1092	1
Generator Lighting	364	1
Emergency Lighting	8760	1
Exit Lighting	8760	1

- Measurements will be accomplished with a recently calibrated RMS clamp meter of the three phase power draw on the 277 volt fixtures. The manufacturer’s rating on this power meter is +1.3% of full scale.
- Savings will be verified post-implementation using a re-measurement of the lighting electrical load immediately after installation.
- The conditions for the base year were chosen as the common set of conditions for calculating current energy use. The post-retrofit energy use, and the reported savings, will be determined on the

basis of the base year conditions as well; and

- All required operation and maintenance procedures will be conducted by the Capitol Complex staff with oversight from THE OWNER to ensure proper functioning of the lighting fixtures post-retrofit.

Base year Energy Use

Base year metering of randomly selected representative lighting circuits will be conducted to derive base year energy use. A statistically derived representative sample size was selected for measuring the power draw. Points are selected based upon type of operating area and type of fixture retrofit (see attached Lighting measurements).

The power draw for each point will be measured as follows – $\text{kW}_{\text{base year}} = [\text{Voltage (V)} \times \text{Amps (A)}] / 1000$

The metered data will be averaged by fixture type to arrive at the base year power draw for the fixture. These actual metered lighting circuit power draws will be used along with the stipulated and verified hours of operation to determine the base year energy use for lighting.

Post-Retrofit Energy Use

Post-retrofit energy use will be determined by measuring the post-retrofit power draw of the same representative points identified in the base year readings.

$\text{kW}_{\text{post-retrofit}} = [\text{Voltage (V)} \times \text{Amps (A)}] / 1000$

Savings

Energy savings for this ECM is determined through the following equation – $\text{Savings kWh} = (\text{Hours} \times \text{Lighting kW}_{\text{base year}}) - (\text{Hours} \times \text{Lighting kW}_{\text{post-retrofit}})$

The difference between the kWh consumption for the existing lighting system and the new system is the lighting energy reduction. Cost savings due to this measure are simply the kWh reduction multiplied by the established cost per kWh.

The savings amount will be determined by the following equations – $\text{Energy Reduction (in kWh)} = \text{Lighting kWh}_{\text{base year}} - \text{Lighting kWh}_{\text{post-retrofit}}$
 $\text{Savings} = \text{Energy Reduction (in kWh)} \times \$/\text{kWh (Electricity Rate)}$

Year 2-15 – Continuous Commissioning

Under continuous commissioning of the lighting systems, the owner proposes to structure the procurement process of replacement lamps and ballasts to ensure savings are realized throughout the project term. This requires that any replacement materials (lamps and ballasts both) be replaced with energy efficient equipment specified by THE OWNER in the Investment Grade Audit design (lighting audit) and O&M manuals.

THE OWNER will also conduct an annual walkthrough of all the buildings in an effort to ensure that correct equipment is installed and is functional.

Personnel Involved

- THE OWNER M&V Manager
- Appointed Contact Person
- Purchasing Department

- Lighting Material Vendor
- Building Manager(s)
- In-house Electricians

Commissioning Process

Following the lighting retrofit project, THE OWNER will submit an “As-built” report to the purchasing department. The “As-built” report will detail the type of lamp and ballast installed at each location in all of the buildings. This “As-built” will serve as a purchasing guide and direct as to what type of lamp and ballast are required in case a replacement is desired at a particular location.

The building managers and in-house electricians will be an important part of this process. Building managers can stipulate the type of lamps and ballasts to be purchased based on THE OWNER’s design. They have to be aware that they do an “in-kind” replacement of the lamps and ballasts and any discrepancies are reported to the purchasing department.

THE OWNER will also work with the preferred lighting vendor to develop a list of materials to be supplied to the Capitol Complex Buildings.

On an annual basis, THE OWNER’s lighting designer and the building managers will conduct a walkthrough of all the buildings to ensure that the lighting savings are not compromised by replacement lamps and ballasts which do not comply with the original design. In the event that non-compliant lamps and ballasts are found, THE OWNER will investigate the problem and address how it can be avoided in the future. Based on the walkthrough, the commissioning report will detail the findings and suggest corrective action in case of any deficiencies/inconsistencies.

Also, THE OWNER will conduct interactive training sessions with all personnel to discuss the continuous commissioning process in case of staff turnover. The training sessions will help THE OWNER address any issues faced by the involved personnel and to better the process moving forward.

The continuous commissioning process will enable THE OWNER and personnel to continuously address any additional lighting improvements. Opportunities to maximize daylighting and related lighting control devices (shades, light shelves, etc) can be investigated. Issues related to lighting levels can be addressed by specifying the required lighting panels.

ECM 2: Window Replacement

Year 1 – Measurement & Verification Plan

An M&V Plan using IPMVP Option “A” is to be used for savings determination. An outline for the plan is as follows –

- The boundary of this ECM is drawn to include only the specified windows, since the proposed implementation will only affect the energy consumption by the windows;
- The base year energy use will, in part, be based on actual field measurements of a sample;
- The electric and thermal savings associated with this ECM will be determined using the assumptions and formulas as set forth in the energy savings calculations for the windows;
- The following will be verified post-installation, to ensure that the installed windows conform to

the assumptions, calculations and formulae used for calculating savings –

- Area of openings:
 - o Finance 23,283 sf
 - o Forum 17,263 sf
 - o North 20,410 sf
 - o Irvis 18,996 sf
 - o Total proposed 79,952 sf
- U – Value of new windows as owned by manufacturer
- Utility rates for electricity and steam
- Bin weather hours for Harrisburg
- Themography of building faces to indicate proper installation (well sealed) and reduced conductive losses

Base year Energy Use

To demonstrate the presence of heat loss through the windows and surrounding areas, THE OWNER will use thermal imaging technology. The thermal images will be acquired through the use of a Mikron Midas infrared camera. This camera is able to detect transfer of infrared energy that is invisible to the human eye. These photos will be taken during daylight so one must consider the presence of infrared energy contributed directly from the sun. Therefore, a cold and cloudy day presents the optimum conditions. The exterior air temperature will be recorded throughout the collection of these images.

Building façade temperatures vary due to their insulation values and the amount of sunlight striking the surfaces. These photos focus more on smaller areas where building insulation may be compromised rather than overall properties of exterior finish materials.

Total building infiltration rates for the existing fenestration have been determined in a simulation of baseline energy use, in which the infiltration rates of all openings having a given orientation are adjusted for typical wind direction and speed, with appropriate factors accounting for pressurization, net air exchange, etc. The simulation will also recognize typical weather conditions; average delivered indoor temperatures, and anticipated heating / cooling efficiencies.

The following relevant information is used in calculating the baseline consumption for existing windows.

Leakage = Perimeter x Crack/12 x Wind Speed x Wind Efficiency, Infiltration = 1.08 x Leakage x (IAT – OAT) x Hours / Heating Efficiency, Conduction = U Value x (IAT – OAT) x Hours / Heating Efficiency, Solar Gain in Tons (SG) = SC x CLF x SHGF x Area / 12000, Solar Gain Demand in kW = SHG x Months x Cooling kW/Ton, and Solar Gain Consumption in kWh = SHG x Cooling kW/Ton x EFL Where, Window Perimeter (Perimeter) = varies per building Window Surface Area (AREA) = varies per building U Value = 1.3 (ASHRAE Fundamentals) Crack = 0.109 inch Hours = 5251 Average Delivered Indoor Air Temperature (IAT) = 67°F Average Outdoor Air Temperature (OAT) = 46.8°F Wind Speed = 660 fpm Wind Efficiency = 20% windward face, 3% sheltered face Heating Efficiency = 86% Equivalent Full Load Hours (EFL) = 900 Shading Coefficient (SC) = 0.67 Cooling KW/Ton = Varies per building Solar Heat Gain Factor (SHGF) = Varies on Window Direction (216, 109, 38) Cooling Load Factor (CLF) =

Varies on Window Direction (0.17, 0.35, 0.75, 0.82) Months of Cooling = 5

Post-Retrofit Energy Use

To detect any presence of heat loss through the windows and surrounding areas, THE OWNER will use thermal imaging technology. The thermal images will be acquired through the use of a Mikron Midas (or approved equal) infrared camera.

Post-retrofit Energy will be derived by calculation using input data determined in the calibrated baseline simulation, along with appropriate stipulated values for the characteristics of the window upgrades.

Routine Adjustments

If there is any discrepancy between the assumptions made and the actual observations adjustments may be required to bring post-retrofit energy use to the conditions of the base year.

Savings

As a basis of estimating the savings for the project, the following relevant information will be used to determine the consumption of the proposed windows.

Leakage = Window Perimeter x Crack/12 x Wind Speed x Wind Efficiency, Infiltration = 1.08 x Leakage x (IAT – OAT) x Hours / Heating Efficiency, Conduction = U Value x Area x (IAT – OAT) x Hours / Heating Efficiency, Solar Gain in Tons (SG) = SC x CLF x SHGF x Area / 12000,

Solar Gain Demand in kW = SHG x Months x Cooling kW/Ton, and Solar Gain Consumption in kWh = SHG x Cooling kW/Ton x EFL Where,

Window Perimeter (Perimeter) = varies per building

Window Surface Area (AREA) = varies per building

U Value = 0.53 (based on manufactured specifications)

Crack = 0.023 inch (based on manufactured specifications)

Heating Hours per year 5251

Average Delivered Indoor Air Temperature (IAT) = 67°F Average Outdoor Air Temperature (OAT) = 46.8°F

Wind Speed = 660 fpm

Wind Efficiency = 20% windward face, 3% sheltered face Heating Efficiency = 86%

Equivalent Full Load Hours (EFL) = 900 Shading Coefficient (SC) = 0.58 Cooling kW/Ton = Varies per building

Solar Heat Gain Factor (SHGF) = Varies on Window Direction (216, 109, 38) Cooling Load Factor (CLF) = Varies on Window Direction (0.17, 0.35, 0.75, 0.82) Months of Cooling = 5

Savings will be the difference between the pre-retrofit consumption, based on the calculations, and the post-retrofit consumption, based on the calculations.

Year 2 – 15 – Continuous Commissioning

Under continuous commissioning of the window systems, THE OWNER proposes to conduct thermal imaging of replacement windows every three (3) years to ensure savings are realized throughout the project term. Over the 15-year term, the U-value of the new windows will be a constant and the only components to be monitored are the window insulation and caulking to detect presence of any leakage.

THE OWNER will also conduct an annual walkthrough of all the buildings in an effort to ensure that the integrity of the window insulation is not compromised over the years.

Personnel Involved

- THE OWNER M&V Manager
- Appointed Contact Person
- Third-party Commissioning Agent
- Building Manager(s)

Commissioning Process

Every three years, after the all the windows have been installed, THE OWNER or a third-party commissioning agent will take the same 38 thermal images of the building windows to compare pre, post and on-going performance.

The following images will be taken:

- North and Irvis Building. –16 total (8 images each building) – 3 on each wide exposure and 1 on each narrow exposure.
- Finance Building - 12 total - 3 on the wide face of the Park side, 1 on each narrow side exposure, and 7 on the wide face with setbacks.
- Forum - 10 total - 3 images on wide face of Park side, 1 on each narrow side exposure, 1 on either side of arched exposure, and 3 on the arched section.

Communication to all building occupants for all windows to be closed the day the images are taken will be required. These images will be taken when the outdoor conditions are optimum: Overcast Sky and Outdoor Temperature below 40°F degrees. The commissioning report will indicate the reference point from where the images were taken from so that the process can be repeated every three years. The report will include the color images and technical write-up defining what the images indicate and will reference the outdoor conditions at the time of the imaging. Any deficiencies will be noted and examined for possible remedies.

ECM 3: Controls and Energy Management System Upgrade and Expansion First Year – Measurement & Verification Plan

An M&V Plan using IPMVP Option “B” is to be used for savings determination for this ECM. An outline for the plan is shown below –

- The boundary of this ECM was drawn to include only the maintenance of indoor temperatures over a range ambient temperatures during occupied and unoccupied periods;
- The base year energy use is based upon the following –
Occupied set points are maintained during unoccupied hours throughout the building; Outside air remains constant as a percentage of total air flow; and
Cooling, heating and humidification energy consumption will take place as a function of outside airflow.
- Energy savings from this measure are derived from these factors –
Night setback will lower space heating and cooling energy consumption during unoccupied hours;
Valve off of the steam supply at times when no additional heat is required in the building will reduce the counter-productive transfer of heat to the space and the cooling systems by way of conductive transfer, deteriorating valves, inappropriate heating systems setpoints, inappropriate cooling system setpoints, and so forth.

Electric consumption for chilled water use to offset nuisance heating will be reduced; Electric consumption for DX cooling to offset nuisance heating will be reduced; Steam use for heating will be reduced.

- The conditions for the base year were chosen as the common set of conditions for calculating current energy use. The post-retrofit energy use, and the reported savings, will be determined on the basis of the base year conditions as well; and

- All required operation and maintenance procedures will be conducted by staff to ensure proper functioning of the systems and controls post-retrofit.

Base year Energy Use

The base year energy use takes into account the following major factors –

- Space temperature achieved;
- Outside air impact;
- Cooling offsets to nuisance heating.

The base year energy use during unoccupied hours is basically due to the total shell and roof load, on the basis of given setpoint during those hours and the outside air load. This would include cooling, heating and humidification loads. The base year temperatures are as denoted in the calculation sheets that are supporting the estimates of baseline and savings.

Initial readings have been taken using hand-held meters, and trends established, to provide an accurate indication of potential savings.

During final design, air velocities will be measured with a hot-wire anemometer, averaged and multiplied by the coil area. Variable volume coil flows will be measured at sequential static readings.

Post-Retrofit Energy Use

After installation and commissioning, the post-retrofit energy use will be determined from performance trends on the main steam, hot water and chilled water interfaces to the buildings, as well as the main AHUs. Hot-wire anemometer readings will be taken to confirm post-retrofit airflows.

The following information will be trended, monitored and used in energy calculations (defined in the IGA) to determine the energy savings annually –

- I. Night setback (or set forward) during unoccupied hours;
- II. Air flow (where possible) to unoccupied areas associated with outside air; and
- III. Fan motor energy use.

Applicable Systems

- North Office Building – AHU-1 & AHU-2 supply and return fans
- East Wing Building – AHUs under Metasys control excepting Kitchen MUA fans
- Irvis Building - AHU-1& AHU-2; AHU-3, AHU-5 and , AHU-6
- Finance Office Building – AHU-A, AHU-B, AHU-C, AHU-D, AHU-E & AHU-F
- Forum Building – Auditorium AHU & Green Room AHU

- IV. Economizer cycle operation; and
- V. Chilled water usage.

Applicable Systems

- Finance Office Building - AHU-A, AHU-B, AHU-C, AHU-D, AHU-E & AHU-F

- VI. Steam use; and
- VII. Use of chilled water.

Applicable Systems

- Finance Office Building - AHU-A, AHU-B, AHU-C, AHU-D, AHU-E & AHU-F
- VIII. Steam use; and
- IX. Use of chilled water and/or DX cooling.

Applicable Systems

- Finance Office Building
 - Forum Building
- X. Reduced steam use.

Applicable Systems

- Finance Office Building
- Forum Building

All of the trend information will be compiled into standard Excel workbooks (used for IGA calculations) and used to calculate the achieved savings. Methodology for each calculation will also be listed there for review.

After installation and commissioning, the post-retrofit energy use will be determined as – Base year Energy Use + Correction to Post-Retrofit Condition

Year 2 – 15 – Continuous Commissioning

Under continuous commissioning of the controls upgrades, THE OWNER will perform quarterly analysis of the performance trends and override logs; a semi-annual review with ECC staff of all the setpoints and overrides; and annual review of the control sequences.

Personnel Involved

- THE OWNER Lead Engineer
- Commissioning agent/Controls contractor
- Appointed contact
- Building Manager(s)
- In-house Controls Technicians and operators

Commissioning Process

The controls upgrade and expansion is the most significant measure in terms of savings and scope. In order that the savings are realized as design, THE OWNER will work with the building managers and in-house controls operators to better the EMS. Prior to each heating season, THE OWNER lead engineer, controls vendor and staff will assemble to remedy any shortcomings and brainstorm potential opportunities to better the system. This will help determine decisions made by the controls operators in managing the buildings, if those decisions are a hindrance to the proposed energy savings and sort out any other problems encountered over the season.

The THE OWNER Lead engineer will work with the facility operating staff to solve any existing mechanical and control problems. The performance evaluation of the system will include quarterly evaluations of on-line performance trends on the main steam, hot water and chilled water interfaces to

the buildings, as well as the main AHU's. Evaluations shall include testing of functions critical to utility usage, including demand ventilation, economizer, and performance of steam, hot water and chilled water valves. Evaluations will occur at each seasonal change.

The results of the performance evaluations, schedule and over-ride reports, as well as any recommended modifications to the operation of the system will be reported to .

After mechanical system and control system troubleshooting, THE OWNER will determine the optimal control set point and/or schedules. These set points and schedules will be then programmed into the version modified by THE OWNER/control contractor.

The version programmed by the controls contractor will be uploaded to the control system. The program will be loaded unit by unit. A comprehensive test will be performed to ensure proper functioning and the optimal set point and/or schedule.

The EMS will be used to trend key operation parameters. The EMS operators and THE OWNER will examine the data periodically to identify any system faults and fine tune the system set points.

The following possible scenarios will be corrected/monitored by the commissioning process:

- VFD's that run at a 100%;
- Night set-backs/time schedules (equipment operating schedules) not used;
- Equipment that is operating inefficiently due to improper operating strategies;
- Energy management systems that were never installed or programmed to take full advantage of their capabilities or which have degraded;
- Improper Sequence of Operation;
- Optimal schedules;
- Incorrect setpoints;
- Controls out of calibration;
- Simultaneous heating and cooling
- Static pressure higher than required in air and water systems
- Reset schedules for hot and chilled water as well as air flow
- Faulty control valves and dampers
- O.A. damper settings
- Failed pressure sensors;
- Failed CO2 sensors;
- Damper Actuators leaking; and
- Filters, coils status.

The commissioning report will detail the findings of the process for each affected system. THE OWNER/controls vendor will evaluate quarterly schedule report, including hours of operation, occupied and unoccupied setpoints and evaluate quarterly over-ride report and performance trends for all major equipment, where applicable.

ECM 4: VFD Installations on Fans

First Year – Measurement & Verification Plan

An M&V Plan using IPMVP Option "B" is to be used for savings determination for this ECM. An outline for the plan is as follows –

- The boundary of this ECM is drawn to include only the ventilation systems, since the proposed implementation will only affect the power input to the fans, heating consumption, and cooling consumption.
- The base year fan loads will be determined through the testing and measurement procedure described. Base year consumption will be determined as the product of the baseline power input and the trended actual run hours at load.
- Instantaneous power measurements will be accomplished with a Fluke 41B Power/Harmonics Analyzer with voltage probes and clamp-on CT with instantaneous display of watts and kW.
- A savings report will be presented, if required, for each subsequent year by correlating the first year savings to appropriate unit costs.
- All required operation and maintenance procedures will be conducted by the facilities staff to ensure proper functioning of the system post-retrofit.

Baseline Energy Use

Initial readings have been taken using hand-held meters, and trends established, to provide an accurate indication of potential savings.

The baseline power input at various levels of load (i.e., flow, as indicated by the control signal) shall be determined through instantaneous measurements taken during final design. Also, air velocities will be measured with a hot-wire anemometer, averaged and multiplied by the coil area. Variable volume coil flows will be measured at sequential static readings.

Base year consumption will be determined as the product of the baseline power input at the average load and the trended actual run hours at load.

Base year Energy Use

Baseline power input for the fans will be established by actual field measurements. Measurements will be done by taking spot measurements with a kW power meter.

The kW demand for the fans is given by the following formula – $kW = (\text{Voltage}_{\text{phase-to-phase}} \times \text{Amperage} \times \text{Power Factor}) / 1000$

The annual energy use in kWh for the fans is given by the following formula –

$kWh = [(\text{Voltage}_{\text{phase-to-phase}} \times \text{Amperage} \times \text{Power Factor}) \times \text{Hours of Operation}] / 1000$ Hours of operation will be totalized based on post-retrofit trending.

Post-Retrofit Energy Use

After installation and commissioning, the post-retrofit energy use will be determined from the following— kW consumption of the fans will be totalized from trends via the EMS. Outdoor air temperatures will be monitored via EMS trends.

Routine Adjustments

If there is any discrepancy between the assumptions made by the VFD calculation worksheet and the actual observations recorded by the DDC system, routine adjustments may be required to bring post-retrofit energy use to the conditions of the base year.

Savings

The difference between the kWh consumption for the existing system and the new system is the motor energy reduction. Cost savings due to this measure are determined as the product of the savings in

demand and energy multiplied by the established unit costs for each month. The savings amount will be determined by the following equations –

Fan Energy Reduction (in kWh) = fan kWh_{base year} – fan kWh_{post-retrofit}

Fan Energy Reduction (in kW/month) = Fan kW_{base year} – Fan kW_{post-retrofit} Fan Cost Savings = Fan Energy Reduction (in kWh) x Electric Rate (\$/kWh)

+ \sum (Fan kW savings_{month1} + Fan kW savings_{month2} ... Fan kW savings_{month n}) Where n=months 1 through 12

Year 2 – 15 – Continuous Commissioning

Under continuous commissioning of the VFD installations, THE OWNER will perform a semi-annual review of all the setpoints, performance trends, override logs, and annual review of the control sequences.

Personnel Involved

- THE OWNER Lead Engineer
- Commissioning agent/Controls contractor
- Appointed contact
- Building Manager(s)
- In-house Controls Technicians and operators

Commissioning Process

The THE OWNER Lead engineer will work with the facility operating staff to solve any existing mechanical and control problems. The performance evaluation of the system will include quarterly evaluations of on-line performance trends of VFD kW.

After mechanical system and control system troubleshooting, THE OWNER will determine the optimal control set point and/or schedules. These set points and schedules will be then programmed into the version modified by THE OWNER/control contractor.

The version programmed by the controls contractor will be uploaded to the control system. The program will be loaded unit by unit. A comprehensive test will be performed to ensure proper functioning and the optimal set point and/or schedule.

The EMS will be used to trend key operation parameters. The EMS operators and THE OWNER will examine the data periodically to identify any system faults and finetune the system set points.

The following possible scenarios will be corrected/monitored by the commissioning process:

- VFD's that run at a 100%;
- Night set-backs/time schedules (equipment operating schedules) not used;
- Equipment that is operating inefficiently due to improper operating strategies;
- Energy management systems that were never installed or programmed to take full advantage of their capabilities or which have degraded;
- Improper Sequence of Operation;
- Incorrect setpoints; and
- Controls out of calibration.

The commissioning report will detail the findings of the process for each affected system. THE OWNER/controls vendor will evaluate quarterly schedule report, including hours of operation, occupied and unoccupied setpoints. Any changes to the setpoints/control sequences will be recorded for future

reference.

ECM 7: Steam Trap Replacement

First Year – Measurement & Verification Plan

An M&V Plan using IPMVP Option “A” is to be used for savings determination. For this ECM, measurements will be taken on a statistically-representative sample (or better) of the steam trap population as a basis for extrapolating savings. Under this procedure, each trap identified during the survey will be documented as to the type, size, location and function. Temperature and/or sonic measurements will be taken by experienced technicians competent in the assessment of steam trap operation, testing procedure(s), failure mode(s), and proper application methodology. Failure rates recorded from the survey will be carried forward with a conservative diversity rate to the entire steam trap group. The proposed rates of loss using the chosen technology will be calculated and averaged as an offset to savings. The hour groups will be agreed upon between and THE OWNER.

An outline of the plan is shown below –

- The boundary of this ECM is drawn to include only the traps documented during the investment grade audit;
- Trap performance will be verified pre-implementation by surveying a sample representative of the total trap population;
- As part of commissioning and M&V, post-implementation measurements will be done on a sample group to provide a level of comfort that the savings are realized.
- The base year conditions are those of the time period preceding efforts to remedy the failures identified as a result of the proposal or IGA. In most cases, the baseline will be the period immediately preceding the decision to proceed with the project. The results from the steam trap survey are extrapolated to the entire population and summarized in the calculations attached to this ECM;
- Trap performance will be verified post-implementation by spot checking a sample group of traps after installation and commissioning on site;
- The conditions for the base year were chosen as the common set of conditions for calculating current energy use. The post-retrofit energy use, and the reported savings, will be determined on the basis of the base year conditions as well; and
- All required operation and maintenance procedures will be conducted by staff to ensure proper functioning of the steam traps post-retrofit.

Base year Energy Use

Base year steam use will be derived from past year’s data provided by the owner. The testing of 100% of the non-radiator traps and approximately 50% of the radiator traps, which determined the existing failure rates, will be used to arrive at the total figure for steam being wasted (see IGA). The following equation calculates the total steam lost for each type of trap –

- For “failed open” traps – $\text{Steam Wasted} = \text{Steam Capacity (lb/hr)} * \# \text{ of Traps} * \text{Hr/Year} * \% \text{ Blowing Loss} * \text{average load rate} * \text{condensate heat utilization rate}$
- For “leaking” traps – $\text{Steam Wasted} = \text{Steam Capacity (lb/hr)} * \# \text{ of Traps} * \text{Hr/Year} * \% \text{ Leaking Loss} * \text{average load rate} * \text{condensate heat utilization rate}$
- Heat utilization rates for condensate depend upon the level of insulation, venting, return / waste / recovery characteristics of the condensate system, as well as the heating loads and thermostatic control characteristics of the spaces through or below which condensate piping passes.

Post-retrofit Energy Use

The post-retrofit steam consumption will guarantee no steam wasted, i.e. a sample of the traps will be tested to demonstrate no leaking or blowing losses. The post sample will include 50% of the non-

radiator traps and 10% of the radiator traps.

Routine Adjustments

Routine adjustments may be required to bring post-retrofit steam use to the conditions of the base year.

Savings

The savings for this ECM will be represented by the avoided Steam waste, as calculated in the Base year.

Year 2 – 15 – Continuous Commissioning

Under continuous commissioning of the steam traps, the facility personnel will perform a temperature and ultrasonic test of a sample of the trap population annually, as directed by THE OWNER, and repair/replace all faulty traps.

Personnel Involved

- THE OWNER Project Manager
- Building Manager(s)
- In-house Plumbers

Commissioning Process

On an annual basis, will conduct a thorough temperature and ultrasonic test of the sample steam trap population to verify leaking and blowing losses and repair/replace failed or leaking traps. The testing will be conducted by staff with the help of the Fluke T-5 meter. Any training needed to operate the meter will be provided by THE OWNER. The Fluke T-5 meter measures temperature and detects leaks by noise.

THE OWNER will develop an audit of the sample traps that need to be tested based on the size and the duty of the traps. This audit will be different for every following year so as to make sure that every trap is tested at least once in a four-year test cycle, starting two years after installation. The sample trap population will be derived on basis of the following –

- Large seasonal traps will be tested every two years
- The annual sample population will consist of at least 25% of the small radiator traps

A commissioning report detailing the traps inspected, temperatures observed (if recorded), pictures taken (if any) and traps to be replaced (if any) will presented on an annual basis.

ECM 9: Insulate bare piping, steam fittings and valves First Year – Measurement & Verification Plan

An M&V Plan developed using IPMVP Option “A” is to be used for savings determination. For this ECM, partial measurement is deemed to provide adequate accuracy since there are multiple similar piping, valves and strainers throughout the project.

An outline of the plan is shown below –

- The boundary of this ECM will be drawn to include only the bare piping, valves and strainers identified during the investment grade audit;
- The base year conditions are those of the time period immediately preceding the decision to proceed with the project. The result below will be extrapolated to arrive at base year conditions –
Piping Heat Loss is based on the following factors:
 - Material of pipe

- Surface area of Bare Piping
- Steam Pressure
- Ambient Temperature
- Insulation performance will be verified post-implementation by re-surveying the previously bare piping, valves and fittings after installation and commissioning on site. External temperature of the insulated areas and steam pressure will be recorded. The conditions for the base year are chosen as the common set of conditions for calculating current energy use. The post-retrofit energy use, and the reported savings, will be determined on the basis of the base year conditions as well; and
- All required operation and maintenance procedures will be conducted by staff to ensure insulation and removable blankets remain in place post-retrofit.

Base year Energy Use

Base year steam use will be derived from data provided by the owner. The following equation calculates the total steam lost for each insulation application—

For bare piping the calculation methodology and a listing of the variables used to determine the energy savings were obtained using values from the 3EPlus® insulation thickness software. The software was used to obtain the values for heat loss in the piping system based on the temperature and diameter of the bare pipe.

For the bare valves and fittings the following equation calculates the total steam lost for each insulation application –

Bare fitting = $25 \times (\text{Temp of bare fitting} - \text{Ambient air Temp}) / (0 + (25/3.2))$
 Insulated Fitting = $0.26 \times (\text{Temp of bare fitting} - \text{Ambient air Temp}) / (1 + (0.26/3.2))$

Heat loss Savings = (Bare – Insulated) x Annual hours of use for the application

Post-retrofit Energy Use

External temperature of the insulated areas and steam pressure will be recorded. The post-retrofit steam consumption will guarantee reduced heat loss from the areas where insulation is applied.

Routine Adjustments

Routine adjustments may be required to bring post-retrofit steam use to the conditions of the base year.

Savings

The savings for this ECM will be represented by the avoided steam waste, as calculated in the Base year.

Year 2 – 15 – Continuous Commissioning

Under continuous commissioning of the insulated piping, THE OWNER and facility personnel will perform an annual visual inspection of steam piping and fittings and report any areas that need re-insulation.

Personnel Involved

- THE OWNER Lead Engineer
- Appointed contact
- Building Manager(s)

Commissioning Process

On an annual basis, THE OWNER will conduct a thorough audit of the insulated steam piping to verify insulation surface areas, integrity of the design criteria and temperature of the insulated areas.

The following will be verified -

- Verify the rigid fiberglass insulation with an exterior covering abutting the existing insulation; and
- External temperatures of any suspect insulation areas will be measured to verify that the temperatures are within the acceptable range.

A commissioning report detailing the areas inspected, temperatures observed (if any), pictures taken (if any) and areas to be re-insulated (if any) will be presented on an annual basis.

ECM 10: Water Conservation Program

First Year - Measurement & Verification Plan

An M&V Plan using IPMVP Option “A” is to be used for savings determination for this ECM. An outline for the plan is as follows –

- The boundary of this ECM is drawn to include only the restroom fixture (toilets, urinals, and faucets) retrofits;
- The water use, pre and post, will be based on actual flow measurements;
- The use/day and facility occupancy figures will be stipulated on the basis of industry standards and agreed upon quantities;
- The operating conditions for the base year are chosen as the common set of conditions for calculating current water use. The post-retrofit water use, and the reported savings, will be determined on the basis of the base year conditions as well;
- All required operation and maintenance procedures will be conducted by the facilities staff to ensure proper functioning of the post-retrofit.

Base year Water Use

Water use is calculated for each fixture type: toilets, urinals, faucets, etc. The consumption rate will be determined by measuring the flow rates and gallons per flush of a representative sample of each fixture type. Faucet flow rates will be measured using a calibrated flow container. Faucets flow rates are taken by turning the valve a quarter turn. Tank type toilets are measured by using a flush meter or by using a water meter connected to the supply line. Flush valve type toilets are measured by flushing the contents into a calibrated bucket, using the flush meter, or by plugging the trap-way and collecting the flushed water into a wet vac.

The average flow rate and flush volume for each fixture type is then used to represent the population baseline flow rate. Post-retrofit measurements will also be measured in this manner. Usage profile for these sanitary fixtures is based on three parameters: population, female to male ratio and the frequency of use of these fixtures. The population includes all personnel and visitors. Following are the equations used to calculate the baseline consumption –

Where –

$$\text{TUPD} = \text{Female} * (\text{NUPD}) + \text{Male} * \text{NUPD}$$

TUPD = Total use per day for toilets, urinals, aerators or showerheads
Female = Number of Female Staff, Visitors and Residents

Male = Number of Male Staff, Visitors and Residents
NUPD= Number of uses per day

Toilets and Urinals –

$UFV_{base} = Q_{base} * TUPD * Occ$ Where –

UFV_{base} = Annual toilet and urinal baseline water use (gal/yr) Q_{base} = Flow rate (gallons per flush)

$TUPD$ = Total use per day (flushes per day) Occ = Occupancy schedules (days per year)

Faucets and Showers –

$UAS_{base} = Q_{base} * TUPD * MPU * DPY$ Where –

UAS_{base} = Annual baseline fixture water use (gal/yr) Q_{base} = Flow rate (gal/min)

$TUPD$ = Total use per day (use/day) MPU = Use rate (min/use)

Occ = Occupancy schedules (day/yr) Kitchen Trough & Disposal –

$UK_{base} = Q_{base} * TUPD * MPU * DPY$ Where –

UK_{base} = Annual baseline water use (gal/yr) Q_{base} = Flow rate (gal/min)

$TUPD$ = Total use per day (use/day) MPU = Use rate (min/use)

Occ = Occupancy schedules (day/yr) Total Baseline Water Consumption

$WC_{base} = UFV_{base} + UAS_{base} + UK_{base} + UL_{base}$ Where –

WC_{base} = Total Annual Baseline Water Consumption (gal/yr) UFV_{base} = Annual toilet and urinal baseline

water use (gal/yr) UAS_{base} = Annual baseline faucet and shower water use (gal/yr) UK_{base} = Annual

baseline Kitchen trough & disposal water use (gal/yr) UL_{base} = Annual baseline water leaks (gal/yr)

Post-Retrofit Water Use

The post-implementation consumption is calculated using the same equation, but with the reduced flow rates. The manufacturers' certified flows will be confirmed after implementation with measurements.

There are additional savings resulting from the existing toilets and urinals that currently leak (assumed as 2% on the basis of industry standard). After implementation, the existing fixtures will be replaced with new fixtures that reduce leaks (~1%).

The following equation is used to calculate post-installation water consumption – $WC_{post} = UFV_{post} + UAS_{post} + UK_{post} + UL_{post}$

Where –

WC_{post} = Total Post Water Consumption (gal/yr)

UFV_{post} = Annual toilet and urinal post water use (gal/yr) UAS_{post} = Annual fixture post water use (gal/yr)

UL_{post} = Annual post water leaks (gal/yr)

Routine Adjustments

Routine adjustments may be required to bring post-retrofit water use to the conditions of the base year, especially if there are any changes to occupancy or schedule.

Savings

The savings are the difference between the baseline consumption (toilets, urinals, and faucets) and the post-retrofit consumption. The following equations are used to calculate water and water cost savings.

Water Savings –

$WS = (WC_{base} - WC_{post}) * Water\ Cost$

Year 2 – 15 – Continuous Commissioning

Under continuous commissioning of the water conservation program, THE OWNER and facility personnel will perform an annual visual inspection of the installed fixtures to detect leaks and improper

replacement parts.

Personnel Involved

- THE OWNER Lead Engineer
- Appointed contact
- Purchasing Department
- Building Manager(s)
- In-House Plumbers

Commissioning Process

The O&M manual provided by THE OWNER for this ECM will include a list of the installed fixtures and the recommended replacement parts for each fixture type. This O&M manual will serve as a purchasing guide and direct as to what type of fixtures and accessory parts are required in case a replacement is desired at a particular location.

The building managers and in-house plumbers will be an important part of this process. Building managers can stipulate the type of fixtures and accessories to be purchased based on THE OWNER's design. They have to be aware that they do an "in-kind" replacement of the water fixtures and any discrepancies are reported to the purchasing department.

On an annual basis, THE OWNER and the building managers will conduct a walkthrough of all the buildings to ensure that the water savings are not compromised by water fixtures and accessories which do not comply with the original design. In the event that non-compliant parts are found, THE OWNER will investigate the problem and address how it can be avoided in the future.

Based on the walkthrough, the commissioning report will detail the findings and suggest corrective action in case of any deficiencies/inconsistencies.

ECM 12: Chiller Plant – 2 Chiller Replacements with VFD Option (NEW) First Year – Measurement & Verification Plan

An M&V Plan using IPMVP Option "B" is to be used for savings determination for this ECM. An outline for the plan is as follows –

- The boundary of this ECM was drawn to isolate the chiller plant, since the proposed implementation will only affect the electricity (kWh) consumption of the chillers and pumps. The load to the plant will not be affected by this measure.
- The base year energy consumption rates in kW/ton for refrigeration (chilled water cooling), heat rejection, condenser pumping, chilled water circulation, etc., will be calculated from actual chiller operational logs and DDC system trends for the chilled water plant provided by . Instantaneous measurements were taken on a daily basis and trended by the chiller plant DDC system and utilized in the spreadsheet model for calculating savings. The resulting kW/ton rates (including operational deficiencies, auxiliary loads, etc.), will be applied to the on-going trend of plant loading in ton-hours to determine the baseline.
- The following parameters shall be monitored through the DDC system on an ongoing basis –
 - Date & Time of day
 - Outside Air temperature
 - (new) chiller Amperage, kW & Voltage
 - Entering & Leaving Chilled Water Temperature

- Entering & Leaving Condenser Water Temperature
- Specific auxiliary equipment (pumps, tower fans, etc. on-line)
- On-going loads were chosen as the common set of conditions for calculating base-line and post-retrofit energy use. The post-retrofit energy use, and the reported savings, will be determined on the basis of the base year consumption rates, post retrofit consumption rates, and post-retrofit chilled water system loading.
- A savings report will be presented annually for the subsequent years by monitoring consumption through the DDC system. Output from the chiller will be trended through the DDC system at 15-minute intervals. The total post-implementation kWh will be given by the following formula (35,040 equals the number of 15 minute intervals per year) – 35,040

$$\text{kWh}_{\text{post-retrofit}} = \sum \text{kW}_n \times 15 \text{ min} / (60 \text{ min/hr}) \quad n=1$$
- All required operation and maintenance procedures will be conducted by the chiller plant staff to ensure proper functioning of the chillers and auxiliaries post-retrofit.

Base year Energy Use

Base year energy use for the chiller is established by applying trended / measured present operations to the trended profiles of cooling load.

The kW demand in each month of chiller operation begins with the following formula applied to each leg of the power supply –

$$\text{kW} = (\text{Voltage}_{\text{phase-to-phase}} \times \text{Amperage} \times \text{Power Factor}) / 1000$$

This calculation is summed for each leg of the service and multiplied by the number of chillers on-line. Similar calculations are executed for each required auxiliary. The number of chillers and attending auxiliaries on-line at any time in the base year will be identified through a table or formula indexed to time/temperature/occupancy from the trends supplied by .

The annual electric consumption for the chillers is given by multiplying baseline incremental power (kW/ton) at steps of 10% to the ton-hours generated at those steps of load for each of the chillers & auxiliaries on-line in the baseline mode. Auxiliary use will be determined on the basis of present operations and include the additional “standby” equipment on-line as necessitated by the unreliable chillers. Auxiliary consumption will be determined as the measured power use by fixed consumers multiplied by the totalized hours of use for that equipment set.

Post-retrofit Energy Use

After installation and commissioning, the post-retrofit energy use will be determined as following:

Peak chiller kW = peak kWh / hr recorded in the trends over the interval of coincident peak billing demand

Chiller kWh = actual chiller kWh totalized by the DDC system

Auxiliary kWh = totalized hours of operation for each fixed consumer x the measured power consumption rate for that equipment set

Routine Adjustments

The calculations of baseline and retrofit demand and consumption may be adjusted to compensate for seasonal irregularities or significant changes in the operation of the chiller plant, as well as changes to the load handled by the plant.

Savings

The difference between the kWh consumption for the existing chillers and auxiliaries and the new chillers and auxiliaries is the energy reduction. The differences in equipment power input over the coincident peak interval constitute the avoided peak demand for each month.

Cost savings due to this measure shall be calculated on the basis of the PPL LP6 tariff, including hours of use and incremental costs for each bin. Dollar savings will be calculated by constructing a baseline bill each month and a post retrofit bill using the differences in peak demand and total consumption.

Year 2 – 15 – Continuous Commissioning

Under continuous commissioning of the Chiller plant, THE OWNER will perform an semi-annual review of all the setpoints, performance trends, override logs and control sequences. Included in the commissioning process will be an interactive training sessions for the chiller plant staff.

Personnel Involved

- THE OWNER Lead Engineer
- Commissioning agent/Controls contractor (when necessary)
- Appointed contact
- Chiller Plant Controls Technicians and operators

Commissioning Process

THE OWNER Lead engineer will work with the chiller plant staff to solve any existing mechanical and control problems. After mechanical system and control system troubleshooting, THE OWNER will determine the optimal chiller staging. These set points and schedules will be then programmed into the version modified by THE OWNER/control contractor.

The version programmed by the controls contractor will be uploaded to the control system. The program will be loaded unit by unit. A comprehensive test will be performed to ensure proper functioning and the optimal staging.

It is important to follow the operating procedures recommended by the manufacturer and THE OWNER's engineering design. Under the commissioning process, calibration of the temperature, pressure and current sensors and flow switches will be done if necessary. The temperature sensors are important for maintaining efficient operation.

The EMS will be used to trend key operation parameters. The EMS operators and THE OWNER will examine the data periodically to identify any system faults and finetune the system set points.

The following possible scenarios will be corrected/monitored by the commissioning process:

- Identify maintenance/replacements, have addressed by Chiller plant staff;
- Optimal chiller staging;
- Reset schedules for chilled water temperatures as well as air flow;
- Supply temperatures;
- VFD's that run at a 100%;
- Equipment operating schedules not used;
- Equipment that is operating inefficiently due to improper operating strategies;
- Improper Sequence of Operation;

- Incorrect setpoints; and
- Controls out of calibration.

It is important to follow the operating procedures recommended by the manufacturer and as per THE OWNER design to achieve the energy savings. THE OWNER will conduct an interactive session with the chiller plant staff on an annual basis to make the sure the chiller plant is operating as efficiently as possible and as per the guidelines set by THE OWNER. Any concerns will be addressed by THE OWNER's lead engineer.

The commissioning report will detail the findings of the process for each affected system. Any changes to the set points/control sequences will be recorded for future reference.

APPENDIX F SAMPLE EQUIPMENT LEASE RIDER

This Lease Rider to the Lease identified in Schedule I (the "Lease") is intended by the parties to the Lease, as a matter of convenience and consistency, to amend and supplement the provisions of, and to supersede and control over any conflicting provisions of, the Lease.

ARTICLE I

DEFINITIONS

Section 1.01. Definitions. The following terms used in this Lease Rider will have the meanings indicated below unless the context clearly requires otherwise:

- "Additional Rental" means all amounts, other than Base Rental, payable to Lessee to Lessor or its assignee pursuant to the Lease.
- "Assignment Agreement" means that certain assignment agreement identified in Schedule I to this Lease Rider, as originally executed or as it may from time to time be amended or supplemented as provided therein.
- "Available Funds" means funds appropriated or otherwise made available, from time to time, by the Owner legislature to pay amounts due under the Lease for the Fiscal Year in which such payments are due.
- "Base Rental" means the rental, with separately owned principal and interest components, payable by Lessee to Lessor or its assignee pursuant to the Lease.
- "Code" means the Internal Revenue Code of 1986, as it may be amended from time to time, and any successor statute.
- "Defeasance Obligation" means obligations of, or guaranteed as to principal and interest by, the United Owners or any agency or instrumentality thereof when such obligations are backed by the full faith and credit of the United Owners.
- "Equipment" means the personal property identified in Schedule I to this Lease Rider.
- "Expiry Date" means the date identified in Schedule I to this Lease Rider.
- "Fiscal Year" means the fiscal year of the Lessee, which at the date of the Lease is the period from July 1 to and including the following June 30.
- "Lease" means that certain Lease identified in Schedule I to this Lease Rider, as originally

executed or as it may from time to time be amended or supplemented as provided herein.

- “Lease Interests” means any fractional interests in the Lease, including, but not limited to, interests evidenced by trust receipts, beneficial interests or certificates of participation.
- “Lease Term” means the term of the Lease as determined pursuant to Article III of this Lease Rider.
- “Lessee” means the Owner of Maryland, by its department identified in Schedule I to this Lease Rider.
- “Lessor” means that certain Lessor identified in Schedule I to this Lease Rider.
- “Net Proceeds” means the amount remaining from the gross proceeds of any insurance claim or condemnation award made in connection with the Equipment, after deducting all expenses (including attorneys’ fees) incurred in the collection of such claim or award.
- “Purchase Price” means, as of any date of calculation, the amount identified in Schedule I to this Lease Rider and made a part hereof, which Lessee may pay or cause to be paid as of such date to Lessor in order to purchase the Equipment or a specific item thereof pursuant to Section 6.01 of this Lease Rider or to purchase the Lessor’s interest in the Lease pursuant to Section 6.02 of this Lease Rider.
- “Rental Payments” means the aggregate of the Base Rental and the Additional Rental payable by Lessee pursuant to the Lease.
- “Rule 15c2-12” means Rule 15c2-12 adopted by the Securities and Exchange Commission under the Securities Exchange Act of 1934, as the same may be amended from time to time.
- “Owner” means the Owner of Maryland.

ARTICLE II

REPRESENTATIONS AND COVENANTS OF LESSEE; REPRESENTATIONS AND COVENANTS OF LESSOR

Section 2.01. Representations and Covenants of Lessee. Notwithstanding any other provision of the Lease, the Lessee makes the following, and only the following, representations, covenants and warranties for the benefit of Lessor and its assignee:

(a) The Lessee is authorized under the Constitution and laws of the Owner to enter into the Lease and the transactions contemplated by the Lease and to perform all of its obligations under the Lease.

(b) The Lessee has been duly authorized to execute and deliver the Lease, and all requirements have been met, conditions have been satisfied and procedures have occurred necessary for the Lease to be a valid obligation of the Lessee, and, when duly executed and delivered by the Lessor, approved by the Director of Finance of the Owner, the Lease will be the valid obligation of the Owner, subject to bankruptcy, insolvency, reorganization, arrangement, fraudulent conveyance, moratorium and other laws relating to or affecting creditors’ rights, to the application of equitable principles, to the exercise of judicial discretion in appropriate cases and to the limitations on legal remedies against the Owner.

(c) The execution and delivery of the Lease will not conflict with or constitute a breach of or default under any law, administrative regulation, judgment, decree, loan agreement, indenture, bond, note, resolution, agreement or other instrument to which the Owner is a party or is otherwise subject.

(d) All approvals, authorizations, consents and orders of any governmental authority, legislative body, board, agency or commission having jurisdiction which would constitute a condition precedent to or the absence of which would materially and adversely affect the due performance by the Owner of its obligation under the Lease have been duly obtained except for such approvals, consents and orders as may be required under any owner or federal securities laws in connection with any disposition of the Lease or Lease Interests by the Lessor.

(e) During the term of the Lease, the Equipment will be used by Lessee only for the purpose of performing one or more governmental or proprietary functions of Lessee consistent with the permissible scope of Lessee's authority

(f)) The Lessee will not make any use of any proceeds of the Lease Interests received by the Lessee or any other funds of the Lessee which will cause the Lease Interests to be "arbitrage bonds" subject to federal income taxation by reason of Section 148 of the Code, or which will cause such obligations to be "federally guaranteed" and subject to inclusion in gross income for federal income tax purposes by reason of Section 149(b) of the Code. To that end, so long as any Rental Payments are unpaid, the Lessee, with respect to such proceeds and such other funds, will comply with all requirements of Sections 148 and 149(b) of the Code and all regulations of the United Owners Department of the Treasury issued thereunder to the extent that such requirements are, at the time, applicable and in effect.

(g)) The Lessee further covenants that it will not use or permit the use of the Equipment by any person in such manner or to such extent as would result in the inclusion of interest received hereunder in gross income for federal income tax purposes under Section 103 of the Code.

Section 2.02. Representations and Covenants of Lessor. In addition to any other representations or covenants contained in the Lease, the Lessor makes the following representations, covenants, warranties and acknowledgments for the benefit of Lessee:

(a) The Lessor covenants and agrees to undertake all responsibility for compliance with owner and federal securities laws, including, but not limited to, responsibility for all actions of any placement agent or underwriter in connection with the offer or sale of Lease Interests. The Lessor acknowledges and agrees that the Lessee has made no undertaking to provide nor has it approved any disclosure or other information for use in connection with the sale of Lease Interests by the Lessor, and Lessor agrees to be fully responsible for any and all disclosure provided to potential investors. The Lessor represents and warrants that the sale of Lease Interests is exempt from Rule 15c2-12, and acknowledges and agrees that the Lessee has made no undertaking to provide any continuing or other disclosure following the execution and delivery of the Lease.

(b) The Lessor acknowledges and agrees that the approval by the Owner of the sale of Lease Interests pursuant to Section 7.01 of this Lease Rider is not approval of the form of Lease Interests or the form of sale of Lease Interests or the form or content of any disclosure documents used in connection with the offer or sale of Lease Interests.

(c) The Lessor covenants and agrees to prominently disclose the following in any disclosure document used in connection with the offer or sale of Lease Interests:

The payment of rent by the Owner pursuant to the Lease is subject to appropriation by the Owner Legislature. The Owner may choose not to appropriate rent for any number of reasons and such failure does not constitute a default on the part of the Owner. The Owner has not participated in the creation of, or passed on or approved, the *[insert appropriate reference to the Lease Interests]* or this *[insert title of disclosure document]*, which were created and prepared, respectively, by the *[insert name of Lessor or vendor]* or its placement agent/underwriter without any review, input or information supplied by the Owner. The Owner has made no representation as to the tax-exemption of the interest component of the rent.

(d)) Lessor acknowledges and agrees that any placement agent or underwriter of Lease Interests is acting as such agent of Lessor and not as agent of Lessee.

(e) Lessor acknowledges and agrees that Lessee has made no representation nor supplied any opinion as to whether the interest component of the rent is exempt from any federal or owner taxation, and that the Lessee is under no obligation to pay or advance any funds (other than any arbitrage rebate required under Section 148(f) of the Code) to preserve or defend any such tax exemption.

(f)) The Lessor shall, on behalf of the Lessee, pursuant to Section 149(e) of the Code, prepare and file an information return (Form 8038-G) with the United Owners Department of the Treasury no later than the 15th day of the second calendar month after the close of the calendar quarter in which the Lease is executed and delivered by the Lessee.

ARTICLE III

LEASE TERM

Section 3.01. Commencement of Lease Term. The Lease Term shall commence on the date of execution of the Lease and shall terminate on the Expiry Date, unless such term is sooner terminated as set forth in Section 6.06 of this Lease Rider. If prior to the Expiry Date the Rental Payments shall have been fully paid and retired, then the term of the Lease shall end simultaneously therewith.

Section 3.02. Termination of Lease Term. The Lease Term and the Lease will terminate as to the entire Equipment [or as to a specific item thereof as provided in Section 4.02(a)] upon the earliest of any of the following events:

(a) The exercise by Lessee of the option to purchase all or a specific item of the Equipment granted under the provisions of Article VI of this Lease Rider;

(b) A default by Lessee and Lessor's election to terminate the Lease pursuant to the terms and provisions of the Lease;

(c) The termination of this Lease pursuant to Section 4.03 of this Lease Rider in the event on non-appropriation of funds by the Legislature; or

(d) The payment by Lessee of all Rental Payments and any other amounts authorized or required to be paid by Lessee under the Lease.

(e) When there shall have been deposited with a third-party escrow agent at or prior to the Expiry Date or a date when Lessee may exercise its option to purchase the Equipment or a specific item thereof, in trust for the benefit of the Lessor or its assignee and irrevocably appropriated and set aside to the payment of the Base Rental payments or Purchase Price, sufficient moneys and Defeasance Obligations, the principal of and interest on which when due will provide money sufficient to pay all principal, premium, if any, and interest components of the Base Rental payments when due, to and including the Expiry Date or the date when Lessee has elected to exercise its option to purchase the Equipment, as the case may be; then and in that event all right, title and interest of Lessor and its assignee in and under the Lease and all obligations of Lessee under the Lease shall thereupon cease, terminate, become void and be completely discharged and satisfied (except for the right of Lessor and the obligation of Lessee to have such moneys and such Defeasance Obligations applied to the payment of the Base Rental payments or Purchase Price) and Lessor's interest in and title to the Equipment or applicable item thereof shall be transferred and conveyed to Lessee. In such event, Lessor shall cause an accounting for such period or periods as may be requested by Lessee to be prepared and filed with Lessee and all such instruments as may be necessary or desirable to evidence such discharge and satisfaction and transfer of the Equipment or applicable item thereof, and Lessor shall pay over to Lessee as an overpayment of Base Rental payments all such moneys or such Defeasance Obligations held by it or its assignee pursuant hereto other than such moneys and such Defeasance Obligations as are required for the payment of the Base Rental payments or the Purchase Price, which moneys and Defeasance Obligations shall continue to be held in trust for the payment of Base Rental payments or the Purchase Price, and shall be applied by Lessor to the payment of the Base Rental payments or the Purchase Price.

ARTICLE IV

RENTAL PAYMENTS

Section 4.01. Rental Payments Limited to Available Funds; Rental Payments to Constitute a Current Expense of the Lessee; No Pledge.

(a)) The obligation of Lessee to make Rental Payments shall be limited to Available Funds. In no circumstance shall Lessee be obligated to pay amounts due under the Lease from any source other than Available Funds, nor shall the Legislature be obligated in any manner to appropriate or otherwise make available Funds.

(b)) The Lessor and the Lessee understand and intend that the obligation of the Lessee to pay Rental Payments under the Lease shall constitute a current expense of the Lessee and shall not in any way be construed to be a debt of the Lessee, nor shall the Lease be construed to be an instrument of indebtedness, in contravention of any applicable constitutional or statutory limitation or requirement concerning the creation of indebtedness by the Lessee. The Lease shall not create an immediate indebtedness for any aggregate payment which may become due during the Lease Term. The Lease, including the obligation of the Lessee to pay the principal and interest components of Base Rental payments, shall not be an obligation for which the full faith and credit of the Lessee is pledged. The Lessor and its assignee shall have no claim or lien on any revenues or other moneys of the Lessee, except Available Funds. Notwithstanding any other provisions of the Lease, the Lessee, in its discretion, may terminate the Lease as set forth in Section 4.03 of this Lease Rider.

Section 4.02. Continuation of Lease Term by the Lessee. The Lessee currently intends, subject to the provisions of Section 4.03 of this Lease Rider, to pay the Rental Payments for the entire Lease Term. The

Lessee reasonably believes that Available Funds in an amount sufficient to make all Rental Payments during the Lease Term can be obtained. The Lessee intends that amounts sufficient to make such payments be included in the Governor's budget request to the Legislature for each fiscal period for adoption in accordance with applicable provisions of the laws of the Owner; provided that, it is understood that the Legislature shall not be obligated to adopt such budget or to appropriate or otherwise make available Available Funds; and provided further that, Lessee expressly reserves the right for any reason or no reason to terminate the Lease as set forth in Section 4.03 of this Lease Rider.

Section 4.03. Nonappropriation. In the event sufficient Available Funds shall not be appropriated by the Legislature for the payment of the Rental Payments required to be paid in the next succeeding Fiscal Year to continue the leasing of the Equipment, the Lessee may terminate the Lease, without penalty, as to all of the Equipment at the end of the then-current Fiscal Year, and the Lessee shall not be obligated to make payment of the Rental Payments provided for in the Lease beyond the then current Fiscal Year. Such termination shall not be considered or treated as a default under the Lease or any other document. If the Lease is terminated under this Section, the Lessee agrees to surrender to the Lessor, or its assignee, the Equipment, in good order and condition and in a owner of repair that is consistent with prudent use and maintenance, except for reasonable wear and tear, and to cease use of the Equipment.

ARTICLE V

MAINTENANCE; MODIFICATION; TAXES; INSURANCE AND OTHER CHARGES

Section 5.01. Insurance. Notwithstanding any other provision of the Lease, the Lessee shall be required to procure or cause to be procured and maintain or cause to be maintained for the Equipment throughout the Lease Term only the following insurance:

- (a) Insurance against loss or damage to the Equipment caused by fire or lightning, with extended coverage insurance on the Equipment; and
- (b) Liability insurance

It is expressly agreed that the Owner may be self-insured for al of the above coverage upon providing a certificate of self-insurance to the Lessor.

Section 5.02. Damage, Destruction and Condemnation; Use of Net Proceeds. Unless Lessee shall have exercised its option to purchase the Equipment by making payment of the Purchase Price as provided herein, if prior to the termination of the Lease Term (a) the Equipment or any portion or item thereof is destroyed (in whole or in part) by fire or other casualty, or (b) title to, or the temporary use of, the Equipment or any portion or item thereof or the owner of Lessee or Lessor in the Equipment or any portion or item thereof shall be taken under the exercise of the power of eminent domain by any governmental body or by any person, firm, or corporation acting under governmental authority, Lessee and Lessor will cause the Net Proceeds of any insurance claim or condemnation award to be applied to the prompt repair, restoration, modification, improvement or replacement of the Equipment or the applicable portion or item thereof. Any balance of the Net Proceeds remaining after such work has been completed shall be paid to Lessee.

Alternatively, if the proceeds of such insurance together with any other moneys then available for the purpose are at least sufficient to prepay an aggregate principal amount of Base Rental attributable to the

portion or item of the Equipment so destroyed or damaged (determined by reference to the proportion which the acquisition, construction and installation cost of such portion or item of the Equipment bears to the acquisition, construction and installation cost of the entire Equipment), Lessee may, at its option, elect not to repair, restore, modify, improve or replace the damaged or destroyed or condemned portion or item of the Equipment and thereupon shall cause said proceeds to be used for the prepayment of Base Rental.

ARTICLE VI

OPTION TO PURCHASE

Section 6.01. Option to Purchase Equipment. Lessor's interest in and title to the Equipment or specific items thereof will be transferred, conveyed and assigned to Lessee and the Lease shall terminate with respect thereto upon the occurrence of the event set forth in subparagraph (a) of this Section 6.01, and at the option of Lessee, Lessor's interest in and title to the Equipment or specific items thereof will be transferred, conveyed and assigned to Lessee and the Lease shall terminate upon the occurrence of the events set forth in subparagraphs (b) or (c) of this Section 6.01:

(a) At the end of the Lease Term, upon payment in full of all Rental Payments due under the Lease pertaining thereto; or

(b) On the dates set forth in Schedule I to this Lease Rider, upon payment of the then applicable Purchase Price as set forth in Schedule I to this Lease Rider, provided that Lessee shall deliver or cause to be delivered notice to Lessor of the intention to exercise the right to make such payment pursuant to this Section 6.01(b) not less than 45 days prior to such date of payment; or

(c) When there shall have been deposited with a third-party escrow agent at or prior to the Expiry Date or a date when Lessee may exercise its option to purchase the Equipment or a specific item thereof, in trust for the benefit of the Lessor or its assignee and irrevocably appropriated and set aside to the payment of the Base Rental payments or Purchase Price, sufficient moneys and Defeasance Obligations, the principal of and interest on which when due will provide money sufficient to pay all principal, premium, if any, and interest components of the Base Rental payment when due to and including the Expiry Date or the date when Lessee has elected to exercise its option to purchase the Equipment, as the case may be.

Section 6.02. Option to Purchase Lease. In lieu of purchasing Lessor's interest in and title to the Equipment or specific items thereof pursuant to Section 6.01 of this Lease Rider, at the option of Lessee, Lessor's or its assignee's interest in and title to the Lease shall be transferred, conveyed and irrevocably assigned to a purchaser (or agent or assignee) designated by Lessee upon the occurrence of the events set forth in subparagraphs (b) or (c) of Section 6.01 of this Lease Rider and notice to the Lessor of Lessee's intention to exercise its option under this Section 6.02.

ARTICLE VII

ASSIGNMENT AND INDEMNIFICATION

Section 7.01. Assignment by Lessor. This Lease (including Lease Interests) may be sold, assigned or otherwise disposed of by Lessor. Lessee agrees to execute all documents, including notices of assignment and chattel mortgages or financing ownerments which may be reasonably requested by Lessor or its assignee to protect their interests in the Equipment and in the Lease during the Lease Term.

By approval of the Lease, the Director of Finance approves the sale, assignment or disposition of the lease and Lease Interests by the Lessor as required by the Act.

Section 7.02. Indemnification.

(a)) The Lessor agrees to indemnify and hold harmless the Lessee against any and all losses, claims, actions, suits, judgements, demands, damages, liabilities, liens and expenses (including reasonable attorneys fees and reasonable costs of investigation) of any nature arising out of or relating to the sale, assignment or other disposition of the Lease or Lease Interests, including without limitation those caused by any actions or omissions or alleged actions or omissions of any underwriter or placement agent for the Lease or Lease Interests or those caused by any untrue ownership or alleged untrue ownership of a material fact contained in any disclosure used in connection with the offer or sale of Lease Interests, or caused by any omission or alleged omission to owner therein a material fact necessary to make the ownerments therein, in the light of the circumstances under which they were made, not misleading in any material respect. The provisions of this paragraph shall survive termination of the Lease with respect to events occurring prior to such termination.

(b)) Lessee shall be responsible for damages or injury caused by Lessee's agents, officers, and employees in the course of the employment, and for any and all claims, actions, losses, damages, obligations, liabilities and liens arising out of the possession, operation, use or return of the Equipment (excluding, however, any of the foregoing resulting from the negligence or willful misconduct of Lessor or its assignee), all to the extent that the Lessee's liability for such damage or injury has been determined by a court or otherwise agreed to by the Lessee, and the Lessee shall pay for such damages or injuries to the extent permitted by law and approved by the Maryland legislature. The provisions of this paragraph shall survive termination of the Lease with respect to events occurring prior to such termination.

ARTICLE VIII

MISCELLANEOUS

Section 8.01. Substitution of Equipment. Any provision in the Lease restricting or otherwise limiting the ability of the Lessee to obtain other equipment in substitution of the Equipment is hereby repealed and deleted in its entirety from the Lease.

Section 8.02. Notices. All notices, certificates or other communications hereunder shall be sufficiently given and shall be deemed given when delivered by registered mail, postage prepaid, or by telecopy (in which case, telephone or mechanical confirmation is required), to the addresses set forth in Schedule I to this Lease Rider.

Section 8.03. Severability. If any one or more of the agreements, conditions, covenants or terms required herein to be observed or performed by or on the part of Lessor or the Lessee shall be contrary to law, then such agreement or agreements, such condition or conditions, such covenant or covenants or such term or terms shall be null and void and shall be deemed separable from the remaining agreements, conditions, covenants and terms hereof and shall in no way affect the validity hereof.

Section 8.04. Amendments. The Lease may be amended in writing as may be mutually agreed by Lessor or its assignee and Lessee, subject to the written approval of the Director of Finance of the Owner and to the approval of form and legality of the Attorney General of the Owner.

Section 8.05. Execution in Counterparts. The Lease may be simultaneously executed in counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

Section 8.06. Applicable Law. The Lease shall be governed by and construed in accordance with the laws of the Owner of Maryland. With respect to any suit, action or proceedings (collectively, the "Proceedings") relating to the Lease, the Lessor hereby irrevocably submits to the jurisdiction of the owner courts of the Owner in Honolulu, Maryland, and waives any objection which it may have at any time to the laying of venue of any Proceedings brought in such courts, waives any claim that the Proceedings have been brought in an inconvenient forum and further waives the right to object, with respect to the Proceedings, that such court does not have any jurisdiction of the Lessor.

Section 8.07. Successors and Assigns. This Lease Rider shall inure to the benefit of and shall be binding upon the Lessor and the Lessee and their respective successors and assigns (including, without limitation, any purchaser or assignee of the Lease or Lease Interests).

IN WITNESS WHEREOF, Lessor has executed this Lease Rider in its name and Lessee has executed this Lease Rider in its name, all as of the date first above written.

"LESSOR"

By _

"LESSEE"

By _

APPROVED:

By _

Director of Finance

SCHEDULE I

I. Definitions

“Assignment Agreement” means _

“Expiry Date” means _

“Lease” means _

“Lessor” means _

“Department” means _

II. Equipment

<u>Description of Item</u>	<u>Cost of Item</u>	<u>Total Cost of Equipment</u>
----------------------------	---------------------	--------------------------------

III. Purchase Price³

<u>Date</u>	<u>Purchase Price</u>
-------------	-----------------------

<u>Principal</u>	<u>Premium (% of Principal)</u>	<u>Total Price</u>
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IV. Addresses (including telephone and fax numbers) Lessor:
Lessee:

³ In the event less than the entire Equipment is to be purchased, the principal portion of the purchase price for the item or items, respectively, shall be the proportion which the cost of such item or items as set forth in “Part II - Equipment” of this Schedule I bears to the cost of the entire Equipment as set forth in “Part II - Equipment” of this Schedule I.

APPENDIX H

SAMPLE EQUIPMENT LEASE PURCHASE AGREEMENT

THIS EQUIPMENT LEASE PURCHASE AGREEMENT (the "Agreement"), is dated as of _____, between _____, a company organized and existing under the laws of the Owner _____, as Lessor ("Lessor"), and **the OWNER in MARYLAND**, by the Department of Budget and Finance, as Lessee ("Lessee"), wherein the parties hereby agree as follows:

Section 1. Definitions. The following terms will have the meanings indicated below unless the context clearly requires otherwise:

"Agency" means _____ which will use the Equipment, as hereinafter defined, and which will be responsible to provide funds to the Department, as hereinafter defined, or at the Department's direction to pay amounts due under this Agreement.

"Agreement" means this Equipment Lease Purchase Agreement and any other schedule, exhibit or escrow agreement made a part hereof by the parties hereto, together with any amendments to this Agreement.

"Available Funds" means funds appropriated or otherwise made available, from time to time, by the Legislature to pay amounts due under this Agreement for the fiscal year of Lessee in which such payments are due.

"Code" means the Internal Revenue Code of 1986, as amended.

"Commencement Date" is the date when the term of this Agreement and Lessee's obligation to pay rent commences, which date will be the earlier of (i) the date on which the Equipment is accepted by Lessee in the manner described in **Section 13**, or (ii) the date on which sufficient moneys to purchase the Equipment are deposited for that purpose with an escrow agent.

"Contract" means any contract or contract with the Vendor for the acquisition and installation of the Equipment.

"Equipment" means the property described on the Equipment Schedule attached hereto as **Exhibit A**, and all replacements, substitutions, repairs, restorations, modifications, attachments, accessions, additions and improvements thereof or thereto.

EXHIBIT B TO EQUIPMENT LEASE PURCHASE AGREEMENT PAYMENT SCHEDULE

Principal Amount: \$[Principal Amount]

Interest Rate: %

Rental payments will be made in accordance with **Section 9** and this Payment Schedule.

Rental Payment Date

Total

Rental Payment

Principal Portion

Interest Portion

Purchase Price

Lessee's Closing Certificate

Re: Equipment Lease Purchase Agreement dated as of __, between the Owner, __ by the Department of Budget and Finance, as lessee ("Lessee"), and __ as lessor ("Lessor") (the "Agreement")

I, the undersigned, the duly appointed, qualified and acting __ (**authorized officer**) of the above-captioned Lessee do hereby certify as of , as follows:

(1) The Comptroller of the Owner has, in accordance with all requirements of law, approved and authorized the execution and delivery of the above-referenced Agreement and the related escrow agreement, if any, on behalf of Lessee by the following named representative of Lessee:

Printed Name Title Signature

[The above signature line to be signed by person who executed the Equipment Lease Purchase Agreement and the escrow agreement, if any, on behalf of Lessee.]

(2) The above-named representative of Lessee held at the time of such authorization and holds at the present time the office designated above and the signature set forth opposite his or her name is the true and correct specimen of his or her genuine signature.

(3) The representative of Lessee named in (1) above and the officers or employees of Lessee from time to time holding the offices or titles set forth below were designated as authorized representatives of Lessee for the Agreement and the escrow agreement, if any (any of them acting alone), and each of the persons listed below is the current holder of the office or title indicated and the signature set forth opposite name of each of them is the true and correct specimen of his or her genuine signature:

Title Printed Name Signature

- (4) Attached hereto is evidence of the approval of the Comptroller referred to in (1) above.
- (5) No event or condition that constitutes, or with the giving of notice or the lapse of time or both would constitute, an Event of Default (as such term is defined in the Agreement) exists at the date hereof.
- (6) All insurance required in accordance with the Agreement is currently maintained by Lessee.
- (7) Lessee has, in accordance with the requirements of law, fully budgeted and appropriated sufficient funds for the current fiscal year to make the Rental Payments scheduled to come due during the Original Term and to meet its other obligations for the Original Term (as such terms are defined in the Agreement), and such funds have not been expended for other purposes.
- (8) There is no proceeding pending or threatened in any court or before any governmental authority or arbitration board or tribunal that, if adversely determined, would adversely affect the transactions contemplated by the Agreement or the interest of Lessor or its assigns, as the case may be, in the Equipment.
- (9) The Equipment has not been the subject of a referendum that failed to receive the approval of the voters of Lessee within the preceding four years.
- (10) [Lessee initial here if this provision is applicable:]

[Lessee initial here if this provision is NOT applicable:]

Lessee hereby designates this Agreement as a “qualified tax-exempt obligation” as defined in Section 265(b)(3)(B) of the Code. The aggregate face amount of all tax-exempt obligations (excluding private activity bonds) issued or to be issued by Lessee and all subordinate entities thereof during the Issuance Year is not reasonably expected to exceed \$30,000,000. Lessee and all subordinate entities thereof will not issue in excess of \$30,000,000 of qualified tax-exempt obligations (including this Agreement but excluding private activity bonds) during the Issuance Year without first obtaining an opinion of nationally recognized counsel in the area of tax-exempt municipal obligations acceptable to Lessor that the designation of this Agreement as a “qualified tax-exempt obligation” will not be adversely affected.

- (11) The correct billing address for Rental Payments is as follows:

IN WITNESS WHEREOF, I hereunto set my hand and the seal of the governing body of Lessee the day and year first above written.

Signature of [authorized official]

Printed or typewritten title and name _____

Subscribed and affirmed before me this _
day of _

, .

Signed: _

(NOTARY SEAL)

My commission expires: _

Notary Certificate: _

**ATTACHMENT TO
LESSEE'S CLOSING CERTIFICATE**

COPY OF AUTHORIZATION DOCUMENT

[OPINION OF COUNSEL—PLEASE FURNISH ON ATTORNEY'S LETTERHEAD]

Date

NAME OF LESSOR: _

ADDRESS: _

Re: Equipment Lease Purchase Agreement dated as of _ between the Owner and Finance, as lessee ("Lessee"), and _ ("Lessor") (the "Agreement") as lessor

Ladies and Gentlemen:

As legal counsel to Lessee, I have examined (a) an executed counterpart of the Agreement, which, among other things, provides for the lease by Lessee from Lessor of the Equipment, (b) an executed counterpart of the Escrow Agreement, dated as of _ (the "Escrow Agreement"), among Lessor, Lessee and _ as Escrow Agent, (c) an executed counterpart of the [Name of Energy Savings Contract], dated _ , (the "Energy Savings Contract"), between Lessee and [Name of Energy Savings Contractor], and (d) such other opinions, documents and matters of law as I have deemed necessary in connection with the following opinions.

Based on the foregoing, I am of the following opinions:

1. Lessee has a substantial amount of one or more of the following sovereign powers: (a) the power to tax, (b) the power of eminent domain, and (c) police power.

2. Lessee has the requisite power and authority to purchase the Equipment and to execute and deliver the Agreement, the Escrow Agreement and the Energy Savings Contract and to perform its obligations under the Agreement, the Escrow Agreement and the Energy Savings Contract.

3. The Agreement, the Escrow Agreement and the Energy Savings Contract and the other documents either attached thereto or required therein have been duly authorized, approved and executed by and on behalf of Lessee, and the Agreement, the Escrow Agreement and the Energy Savings Contract are valid and binding obligations of Lessee enforceable in accordance with their respective terms.

1. The authorization, approval and execution of the Agreement, the Escrow Agreement and the Energy Savings Contract and all other proceedings of Lessee relating to the transactions contemplated thereby have been performed in accordance with all open meeting laws, public bidding laws and all other applicable owner and federal laws, including without limitation [Describe applicable Energy Savings Statute].

2. There is no proceeding pending or threatened in any court or before any governmental authority or arbitration board or tribunal that, if adversely determined, would adversely affect the transactions contemplated by the Agreement, the Escrow Agreement and the Energy Savings Contract or the security interest of Lessor or its assigns, as the case may be, in the Equipment.

3. The Equipment to be leased pursuant to the Agreement constitutes personal property and when subjected to use by Lessee will not be or become a fixture under applicable law.

All capitalized terms herein will have the same meanings as in the Agreement. Lessor, its successors and assigns and any counsel rendering an opinion on the exclusion of the interest components of Rental Payments from gross income for purposes of federal income taxation are entitled to rely on this opinion.

Very truly yours,

APPENDIX H
SAMPLE ESCROW AGREEMENT

LESSOR: ESCROW AGENT:

LESSEE: OWNER OF MARYLAND by the Department of Budget and Finance
[Address of Lessee]

THIS ESCROW AGREEMENT (this "Escrow Agreement") dated __, is entered into by and among ("Lessee"), and __, the Owner of (the "Escrow Agent").

Lessor and Lessee have heretofore entered into that certain Equipment Lease Purchase Agreement dated __, (the "Agreement"). The Agreement contemplates that certain Equipment described therein (the "Equipment") is to be acquired from the vendor(s) or manufacturer(s) thereof.

After acceptance of the Equipment by Lessee, the Equipment is to be leased by Lessor to Lessee pursuant to the terms of the Agreement.

The Agreement contemplates that Lessor will deposit with the Escrow Agent cash in the amount of \$[Principal Amount], to be held in escrow by the Escrow Agent and applied on the express terms and conditions set forth herein. Such deposit, together with all interest and additions received with respect thereto (hereinafter, the "Escrow Fund"), is to be applied from time to time to pay the vendor(s) or manufacturer(s) of the Equipment its invoice cost (a portion of which may, if required, be paid prior to final acceptance of the Equipment by Lessee).

The parties desire to set forth the terms on which the escrow is to be created and to establish the rights and responsibilities of the parties hereto.

NOW, THEREFORE, the parties agree as follows:

1. The Escrow Agent hereby agrees to serve as escrow agent upon the terms and conditions set forth herein. The Escrow Agent agrees that the Escrow Fund shall be held irrevocably in trust for the account and benefit of Lessee and Lessor and all interest earned with respect to the Escrow Fund shall

accrue to the benefit of Lessee and shall be applied as expressly set forth herein.

To the limited extent required to perfect the security interest granted by Lessee to Lessor in the cash and negotiable instruments from time to time comprising the Escrow Fund, Lessor hereby appoints the Escrow Agent as its security agent, and the Escrow Agent hereby accepts the appointment as security agent, and agrees to hold physical possession of such cash and negotiable instruments on behalf of Lessor.

2. On such day as determined to the mutual satisfaction of the parties (the "Commencement Date"), Lessor shall deposit with the Escrow Agent cash in the amount of \$[Principal Amount] to be held by the Escrow Agent on the express terms and conditions set forth herein. The Escrow Agent agrees to accept the deposit of the Escrow Fund by Lessor, and further agrees to hold the amount so deposited together with all interest and other additions received with respect thereto in escrow on the express terms and conditions set forth herein.

3. The Escrow Agent shall at all times segregate the Escrow Fund into an account maintained for that express purpose, which shall be clearly identified on the books and records of the Escrow Agent as being held in its capacity as Escrow Agent. Securities and other negotiable instruments comprising the Escrow Fund from time to time shall be held or registered in the name of the Escrow Agent (or its nominee). The Escrow Fund shall not, to the extent permitted by applicable law, be subject to levy or attachment or lien by or for the benefit of any creditor of any of the parties hereto (except with respect to the security interest therein held by Lessor).

4. The cash comprising the Escrow Fund from time to time shall be invested by the Escrow Agent in such Qualified Investments (as hereinafter defined) in accordance with the written investment directions of Lessee. Interest or other amounts earned and received by the Escrow Agent with respect to the Escrow Fund shall be deposited in and comprise a part of the Escrow Fund. No investment shall be made that would cause the Agreement to be deemed to be an arbitrage bond within the meaning of Section 148(a) of the Internal Revenue Code of 1986, as amended.

For the purpose of this paragraph 4, the term "Qualified Investments" means, to the extent the same are at the time legal for investment of the funds being invested:

(i) money market funds, whose investment parameters target investments in (a) direct general obligations of the United Owners of America; (b) obligations, the timely payment of the principal of and interest on which is fully and unconditionally guaranteed by the United Owners of America; or (c) general obligations of the agencies and instrumentalities of the United Owners of America acceptable to Lessor; (ii) money market funds or other interest bearing demand/depository accounts provided by an affiliate of Lessor, appropriately collateralized if required by the laws of the Owner of Maryland; or such other investments permitted by a policy duly adopted by Lessee's governing body and approved by Lessor.

5. Lessor and Lessee hereby authorize the Escrow Agent to take the following actions with respect to the Escrow Fund:

a. From time to time, the Escrow Agent shall pay the vendor or manufacturer of the Equipment or Lessee upon receipt of the following: (a) a duly executed Certificate of Acceptance and Payment Request in the form attached as **Exhibit E** to this Escrow Agreement, (b) the vendor(s) or manufacturer(s) invoice(s) specifying the acquisition price of the Equipment

described in the requisition request, and (c) any additional documentation required by Lessor. Lessor shall not approve any such payment unless and until Lessee shall have provided to Lessor (i) payment and performance bonds naming Lessor as a dual obligee and issued by a surety company rated "A" or better by AM Best, and (ii) written evidence satisfactory to Lessor that Lessee has expended from other available sources at least \$_ which the Equipment constitutes a part on the energy savings project as to .

b. In the event that Lessor provides to the Escrow Agent written notice of the occurrence of an Event of Default or a nonappropriation by Lessee under the Agreement, the Escrow Agent shall thereupon promptly remit to Lessor the entire balance of the Escrow Fund.

c. Upon receipt by the Escrow Agent of a duly executed Certificate of Acceptance and Payment Request identified as the final such request, the remaining monies in the Escrow Fund shall, *first* be applied to all reasonable fees and expenses incurred by the Escrow Agent in connection herewith as evidenced by its ownerment forwarded to Lessor and Lessee; and, *second* be paid to Lessor, for application against the outstanding principal components of Rental Payments (as defined in the Agreement) under the Agreement, as provided therein, unless Lessor directs that payment of such amount be made in such other manner directed by Lessor that, in the opinion of nationally recognized counsel in the area of tax-exempt municipal obligations satisfactory to Lessor, will not adversely affect the exclusion of the interest components of Rental Payments from gross income for federal income tax purposes. If any such amount is used to prepay principal, the Payment Schedule attached to the Agreement will be revised accordingly as specified by Lessor.

6. The reasonable fees and expenses of the Escrow Agent incurred in connection herewith shall be the responsibility of Lessor and are herein defined as the sum of \$, for escrow services as described herein; plus any extraordinary expenses incurred by the Escrow Agent at the request of Lessor or Lessee.

7. The Escrow Agent shall have no liability for acting upon any written instruction presented by Lessee and Lessor in connection with this Escrow Agreement which the Escrow Agent in good faith believes to be genuine. Furthermore, the Escrow Agent shall not be liable for any act or omission in connection with this Escrow Agreement except for its own gross negligence, willful misconduct or bad faith. The Escrow Agent shall not be liable for any loss or diminution in value of the Escrow Fund as a result of the investment decisions made pursuant to Section 4, Qualified Investments at the direction of Lessee.

8. To the extent authorized by law, Lessee hereby agrees to indemnify and save the Escrow Agent harmless against any liabilities which it may incur in the exercise and performance of its powers and duties hereunder and which are not due to the Escrow Agent's gross negligence or willful misconduct. No indemnification will be made under this Section or elsewhere in this Escrow Agreement for damages arising solely out of gross negligence, willful misconduct or bad faith by the Escrow Agent, its officers, agents, employees, successors or assigns.

9. The Escrow Agent may at any time resign by giving at least 30 days' prior written notice to Lessee and Lessor, but such resignation shall not take effect until the appointment of the successor Escrow Agent. The substitution of another bank or trust company to act as Escrow Agent under this Escrow Agreement may occur by written agreement of Lessor and Lessee. In addition, the Escrow Agent may be removed at any time, with or without cause, by instrument in writing executed by Lessor and Lessee. Such notice shall set forth the effective date of the removal. In the event of any resignation or removal of the Escrow Agent, a successor Escrow Agent shall be appointed by an instrument in writing executed by Lessor and Lessee. Such successor Escrow Agent shall indicate its acceptance of such appointment by an instrument in writing delivered to Lessor, Lessee and the predecessor Escrow Agent.

Upon the effective date of resignation or removal, the Escrow Agent will transfer the Escrow Fund then held by it to the successor Escrow Agent selected by Lessor and Lessee.

10. This Escrow Agreement and the Escrow Fund established hereunder shall terminate upon receipt by the Escrow Agent of the written notice from Lessor specified in Section 5(b) or Section 5(c) hereof.

11. All notices hereunder shall be in writing, sent by certified mail, return receipt requested, or by mutually recognized overnight carrier addressed to the other party at its respective address shown on page 1 of this Escrow Agreement or at such other address as such party shall from time to time designate in writing to the other parties; and shall be effective on the date of receipt.

12. This Escrow Agreement shall inure to the benefit of and shall be binding upon the parties hereto and their respective successors and assigns. No rights or obligations of the Escrow Agent under this Escrow Agreement may be assigned without the prior written consent of Lessor and Lessee. This Escrow Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof, and no waiver, consent, modification or change of terms hereof shall bind any party unless in writing signed by all parties.

13. The Escrow Agent may employ agents, attorneys and accountants in connection with its duties hereunder and shall not be liable for any action taken or omitted in good faith in accordance with the advice of counsel, accountants or other skilled persons.

14. This Escrow Agreement shall be governed by and be construed and interpreted in accordance with the internal laws of the Owner .

IN WITNESS WHEREOF, the parties hereto have caused this Escrow Agreement to be duly executed under seal as of the day and year first above set forth.

LESSOR: _

By: _

Name: _

Title: _

LESSEE: Finance By: _

Name: _

Title: _

ESCROW AGENT: [NAME OF ESCROW AGENT]

By: _

Name: _

Title: _

By: _

Name: _

Title: _

EXHIBIT

CERTIFICATE OF ACCEPTANCE AND PAYMENT REQUEST

_ (the "Escrow Agent"), as escrow agent under that certain Escrow Agreement dated __, (the "Escrow Agreement"), by and among the Owner of ("Lessee"), __("Lessor") and the Escrow Agent, is hereby requested to pay from the Escrow Fund established and maintained thereunder, the amount set forth below to the named payee(s). The amount shown is due and payable under a purchase order or contract (or has been paid by and not previously reimbursed to Lessee). The equipment described below is part or all of the Equipment listed in the Equipment Schedule to that certain Equipment Lease Purchase Agreement dated _ Lessee: (the "Agreement"), between Lessor and Lessee hereby certifies and represents to and agrees with Lessor as follows with respect to the Equipment described above: (i) the Equipment has been

delivered and installed at the location(s) set forth in the Equipment Schedule; (ii) a present need exists for the Equipment which need is not temporary or expected to diminish in the near future; (iii) the Equipment is essential to and will be used by Lessee only for the purpose of performing one or more governmental functions of Lessee consistent with the permissible scope of Lessee's authority; (iv) the estimated useful life of the Equipment based upon the manufacturer's representations and Lessee's projected needs is not less than the term of lease with respect to the Equipment; (v) Lessee has conducted such inspection and/or testing of the Equipment as it deems necessary and appropriate and hereby acknowledges that it accepts the Equipment for all purposes as of the date of this Certificate; (vi) the Equipment is covered by insurance in the types and amounts required by the Agreement; (vii) no Event of Default or nonappropriation, as such terms are defined in the Agreement, and no event which with the giving of notice or lapse of time or both, would become an Event of Default or nonappropriation, has occurred and is continuing on the date hereof; (viii) sufficient funds have been appropriated by Lessee for the payment of all rental payments due under the Agreement during Lessee's current fiscal year.

QUANTITY	DESCRIPTION OF UNITS OF EQUIPMENT	AMOUNT	PAYEE
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Based on the foregoing, Lessor is hereby authorized and directed to fund the acquisition of the Equipment set forth in the Lease by paying, or causing to be paid, the manufacturer(s)/vendor(s) the amounts set forth on the attached invoices from the Escrow Fund held under the Escrow Agreement in accordance with its terms.

The following documents are attached hereto and made a part hereof: (a) Original Invoice(s); and/or (b) Copies of Certificate(s) of Origin, when applicable, designating Lessor as lienholder if any part of the Equipment consists of motor vehicles, and evidence of filing.

IF REQUEST IS FOR REIMBURSEMENT, CHECK HERE . Lessee paid an invoice prior to the commencement date identified in the Equipment Schedule and is requesting reimbursement for such payment, a copy of evidence of such payment together with a copy of Lessee's Declaration of Official Intent and other evidence that Lessee has satisfied the requirements for reimbursement .

IF REQUEST IS FINAL REQUEST, CHECK HERE . Lessee hereby certifies that the items of Equipment described above, together with the items of Equipment described in and accepted by Certificates of Acceptance and Payment Requests previously filed by Lessee with Lessor constitutes all of the Equipment subject to the Equipment Schedule.

Date:

Approved:

, as Lessor

OWNER Lessee

By:

By:

Name:

Name:

Title:

Title: